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GLEANINGS

IN BEE CULTURE



THE A. I. ROOT CO.,
MEDINA, OHIO.

Western Edition

Entered at the Postoffice, Medina, Ohio, as Second-class Matter

North Texas Beekeepers

will find Dallas the best point from which to purchase supplies. We have a carload of ROOT'S GOODS in stock, and sell them at Factory Prices. Don't forget that we can furnish anything in the way of field or garden seeds, plants, and poultry supplies. Large illustrated catalog for 1906 free on application. Mention *Gleanings* when you write. Wish to purchase Beeswax.

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Seed and Floral Co.
Dallas, Tex.

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We carry a
large and complete stock of

The ROOT'S 1906 BEE-SUPPLIES

All orders filled same day as received, thus insuring for our customers quick service, Springfield freight rates,

FACTORY PRICES

Send for seed catalog, bulb and plant catalog, Cyphers incubator catalog, The A. I. Root Co. bee-supply catalog

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Springfield, Mo.

MR. TEXAS BEE-KEEPER

I would like to talk to you *personally*.

First, I want you to know about my supplies. I handle Root's Goods, of course; for I believe in giving my customers complete satisfaction—for that's *better* in the long run than low prices. My place of business is on the S. A. & A. P. Ry., just opposite the passenger depot, where I have built a warehouse 40×250 feet, and I have filled it full to the brim, for I handle Root's goods by the carload. This means I can furnish you supplies with the utmost promptness.

Then, too, I have installed a complete Weed-Process Foundation factory. I can turn out 500-lbs. a day. I can work your wax into foundation. In fact, my facilities in this line are not surpassed in Texas.

My can business is increasing by leaps and bounds. That is because of the quality of the goods. It will save you dollars to get my prices. Better write for them to-day.

Nothing pleases me better than for bee-keepers to make their headquarters at my office when at San Antonio. You are *always* welcome. I have fitted up my office with plenty of desks and chairs, with writing material, a reading-table, and all the bee-journals on hand. Consider yourself invited.

If you haven't my catalog just drop a postal.

Call for Address

Udo Toepperwein - San Antonio, Texas

1322 South Flores Street

C. H. W. Weber,

Headquarters for

Bee - Supplies.

**Distributor of Root's Goods Exclusive-
ly, at Root's Factory Prices.**

Give me your order for the BEST GOODS MADE. You will be pleased on receipt of them. You will SAVE MONEY by ordering from me. My stock is complete; in fact, I keep EVERY THING the BEE-KEEPER needs. CINCINNATI is one of the best SHIPPING-POINTS in the Union, PARTICULARLY IN THE SOUTH, as all freight now GOES THROUGH CINCINNATI. Satisfaction guaranteed. Send for descriptive catalog and price list. It will be mailed you promptly FREE of charge.

Four Per Cent Discount For Cash Orders Received in February

I will buy your HONEY AND BEESWAX. I pay CASH ON DELIVERY; or, if you are in NEED OF HONEY, write for prices and state quantity wanted, and I will quote you the lowest price of any quantity wanted—in cans, barrel-lots, or car-lots—of EXTRACTED or COMB HONEY. I guarantee its purity.

QUEENS AND NUCLEI.

Let me book your order for queens. I breed the finest GOLDEN ITALIANS, RED-CLOVERS, CARNIOLANS, and CAUCASIANS. Can furnish NUCLEI beginning of June. For prices, refer to catalog, page 25.

I have in stock seeds of the following honey-plants: White and Yellow Sweet-scented Clover, Alfalfa, Alsike, Crimson Clover, Buckwheat, Phacelia, Rocky Mountain Bee-plant, and Catnip.

C. H. W. WEBER,

**Office and Salesroom, 2146-2148 Central Ave.
Warehouse, Freeman and Central Avenue.**

Cincinnati, - Ohio.

Honey Market.

GRADING-RULES.

FANCY.—All sections to be well filled, combs straight, firmly attached to all four sides, the combs unsoiled by travel, stain or otherwise; all the cells sealed except an occasional cell, the outside surface of the wood well scraped of propolis.

A No. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of comb surface soiled, or the entire surface slightly soiled; the outside of the wood well scraped of propolis.

No. 1.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled, or the entire surface slightly soiled.

No. 2.—Three-fourths of the total surface must be filled and sealed.

No. 3.—Must weigh at least half as much as a full-weight section.

In addition to this the honey is to be classified according to color, using the terms white, amber, and dark; that is, there will be "Fancy White," "No. 1 Dark," etc.

DENVER.—Owing to the mild winter weather the demand for honey has not been as good as it usually is at this time of the year. We have a fair stock of both comb and extracted of very fine quality which we are quoting as follows: Strictly No. 1 white alfalfa comb honey, \$3.35 to \$3.75 per case of 24 sections. Off grades and light amber at \$3.00 to \$3.30 per case. White extracted alfalfa in 60-lb. cans, 7½ to 8½; light amber extracted, 6½ to 7½. We pay 24 cents per pound for clean yellow beeswax delivered here.

THE COLORADO HONEY PRODUCERS' ASS'N,
Feb. 10. Denver, Colo.

ST. LOUIS.—Our honey market is unchanged in prices with a limited demand for extracted honey. We quote: Fancy white comb honey, 13 to 14; No. 1, 12 to 13; amber, 11 to 12. Extracted California, light amber, 6 to 6½; Southern, in barrels, 4½ to 4¾; in cans, 5 to 5½. Beeswax, 29c per lb.
R. HARTMANN & Co.,
Feb. 9. 14 So. Second St., St. Louis, Mo.

CHICAGO.—The demand is about normal, with sufficient stocks to meet all requirements. The best grades of white comb honey bring 14 to 15, with off grades 1 to 3 cts. less, depending upon color, condition, and shape. Extracted, aside from white clover and basswood (choice grades of which are practically unattainable), is in ample supply at 6½ to 7½; amber, 6½ to 7, with off grades still lower. Beeswax, 30.

R. A. BURNETT & Co.,
Feb. 7. 199 South Water St., Chicago, Ill.

BOSTON.—The demand for strictly new honey continues good with a light supply, while there is a large quantity of old carried forward from 1904 that moves very hard. Strictly new stocks, fancy grades, 16, and from that down to 14, according to quality. Extracted is moving quite freely from 6 to 8, according to quality.

BLAKE, SCOTT & LEE,
Feb. 9. 31-33 Commercial St., Boston, Mass.

BUFFALO.—The honey is pretty well cleaned up around this market. It has sold better this winter than usual. Generally there is very little sale after the first of January. No. 1 to fancy white clover comb, 13 to 14; mixed, 9 to 10; dark, 10 to 11; white extracted, 6 to 7½; amber, 6 to 6½; dark, 5½ to 6. Jelly-tumblers, \$1.00 per doz. Beeswax, 28 to 32.

W. C. TOWNSEND,
Feb. 9. Buffalo, N. Y.

CINCINNATI.—The honey market is quiet. We do not offer white-clover extracted honey, on account of its scarcity; instead, we offer a fancy water-white honey, equal to if not better than the white clover, in 60-lb. cans, two in a crate, at 7¼ to 8½c. Fancy light amber, 7½c. Other grades of amber in barrels at 5¼ to 6¼, according to the quality. Fancy comb honey, 16½c.

(Bee-keepers, please observe that the above are our selling prices of honey, not what we are paying.)

Beeswax is wanted, and we are paying 30c per lb. delivered here for choice bright-yellow grade.

THE FRED W. MUTH CO.,
Jan. 20. 51 Walnut St., Cincinnati, O.

SCHENECTADY.—There is quite a scarcity of buckwheat comb and white extracted in our market. From present indications there will be no honey carried over this season, which is rather unusual. No change in prices.

Feb. 8. CHAS. McCULLOCH, Schenectady, N. Y.

KANSAS CITY.—The market on comb honey is sluggish, but we look for it to be better after the 1st of the month. It is selling, white, at \$3.00; amber, \$2.75. Extracted, 5½ to 6½, according to quality.

C. C. CLEMONS & Co.,
Feb. 8. Kansas City, Mo.

ATLANTA.—The scarcity of honey is being rather keenly felt, and we look forward with pleasure to the opening of the new season. We quote as follows: Fancy white, 12½ to 14; A No. 1, 11 to 12½; No. 1, 10. Beeswax, 28 to 30c.
JUDSON HEARD & Co.,
Feb. 8. Atlanta, Ga.

TOLEDO.—The demand for comb honey at this writing is not very brisk, and the prices are the same as last quotations. The demand for extracted honey is good, and would bring in barrels 6½ to 7½; cans, 7½ to 8½. Beeswax, 27 and 30.

GRIGGS BROTHERS,
Feb. 8. 521 Monroe St. Toledo, Ohio.

CINCINNATI.—The nice weather holds back the demand for comb honey. Crops seem to be exceedingly short, and producers in the West keep prices high. We quote as follows: Fancy water white and No. 1 white clover, 14 to 16c; No. 2, 12 to 14. Extracted seems to be more plentiful, and we quote same in barrels at 5¼ to 5½c; in cans, ½c more; white clover, 7 to 8c. Beeswax, 28 to 30c.
C. H. W. WEBER,
Jan. 23. 2146-8 Central Ave., Cincinnati, O.

BEE SUPPLIES.

We handle the finest bee supplies, made by the W. T. FALCONER MFG. CO., Jamestown, N. Y. Big Discounts on early orders, let us figure with you on your wants.

MUTH SPECIAL DOVE TAIL HIVES, have a honey board, warp-proof cover, and bottom board, think of it, same price as the regular styles. Send for Catalog.

THE FRED. W. MUTH CO.,

51 WALNUT ST.,

CINCINNATI, OHIO.

FOR SALE.—Finest quality new-crop California water-white, white-sage, and light-amber honey in 60-lb. tins, two in a case; new cans and new cases. Write for prices and samples, and state quantity you want.
HILDRETH & SEGELKEN, 82 Murray St., N. Y. City.

FOR SALE.—One ton No. 1 white comb honey, in no-drip cases, 24 sections to case, at 14c per lb. Water-white extracted 8½c; amber, 7c, in 60-lb. cans, two in a case. Light-weight white comb at 13c.
QUIRIN-THE-QUEEN-BREEDER, Bellevue, O.

FOR SALE.—Superior grades of extracted honey for table use. Prices quoted on application. Sample, 10 cts. to pay for package and postage.
O. L. HERSHISER, 301 Huntington Av., Buffalo, N. Y.

FOR SALE.—Fine alfalfa honey in 60-lb. cans. Send for sample and prices.
DADANT & SONS, Hamilton, Ills.

WANTED.—Comb and extracted honey. State quality, quantity, and price.
JUDSON HEARD & Co., Atlanta, Ga.

WANTED.—Beeswax. Will pay spot cash and full market value for beeswax at any time of the year. Write us if you have any to dispose of.
HILDRETH & SEGELKEN,
265-267 Greenwich St., New York.

WANTED.—Fancy clover extracted honey. Send sample and quote lowest price.
J. E. CRANE & SON, Middlebury, Vt.

WANTED.—Comb, extracted honey, and beeswax. State price, kind, and quantity.
R. A. BURNETT,
199 South Water St., Chicago, Ill.

WANTED.—Fancy white comb honey, also extracted honey in barrels. Send samples, and name best price delivered here.
GRIGGS BROS., Toledo, Ohio.

WANTED.—Clover and basswood extracted honey; also No. 1 amber honey. Send sample, and state quantity and price, delivered at Preston.
M. V. FACEY, Preston, Fillmore Co., Minn.

WANTED.—We will be in the market for comb honey in both local and car lots, and parties having same to sell or consign will do well to correspond with us.
EVANS & TURNER, Columbus, Ohio.

WANTED.—A case of two 60-lb. cans extracted honey (1906 crop) of each variety or source from every State in the U. S.; also from Canada, Mexico, West Indies, and other accessible countries. With each lot is required a certificate guaranteeing absolute purity of the honey, and gathered from the source named. Exceptional care must be taken to have the honey well ripened, of good representative color from source named. The honey should be extracted from clean new combs free from pollen. An extra price of about 2 cts. per pound will be paid for such honey, or we will arrange, if desired by any, to supply those co-operating and furnishing sample shipments, with ¼-lb. samples of each variety secured, labeled with name of producer, year, and source of honey. We expect to secure at least sixty varieties of American and foreign honeys. Do not ship, but advise us what you can furnish, and on what basis.
THE A. I. ROOT CO., Medina, Ohio.

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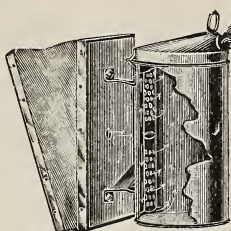
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**UP-TO-DATE.
STRONGEST,
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CLEANEST,**

It has a side grate that strengthens the fire-cup, and holds a removable metal and asbestos lining that keeps it cool adding to its durability. It has no valves to get out of order or snout to clog with soot.

Every Thing Guaranteed "Root Quality."

ALL THAT IS CLAIMED.—The General Manager of the National Bee-keepers' Association says:

I have given your Twentieth Century a thorough trial. For convenience in lighting, durability, and long time one filling will last and give ample smoke, I find it all you claim. In the spring I shall want several. I always want the best. N. E. FRANCE, Platteville, Wis.

SURPASSES ALL OTHERS.—"After giving the Danzenbaker Twentieth Century Smoker several trials, can say it surpasses all smokers it has been my liberty to try; it will not go out until fuel all consumed, and it produces a cool smoke, a feature very necessary in any first-class smoker." Grant Stanley, Nisbet, Pa.

Prices: By mail, \$1.25; three, \$3.25.

By express or freight, one, \$1.00; three, \$2.50.

For further particulars, see Dec. 15th Gleanings, page 1370; sent free with price list.

F. DANZENBAKER, MIAMI, FLORIDA

Montana, Minnesota, Dakota, and Western Wisconsin Bee-keepers!

You can save freight by ordering of the St. Paul Branch. We have a complete stock of bee-keepers' supplies. Write at once for catalog and obtain our early-order discounts.

BEES AND QUEENS—Orders booked now for spring delivery.

HONEY AND WAX—We handle honey and wax. Write for particulars.

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Gleanings in Bee Culture.

Devoted to Bees, Honey, and Home Interests.

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Established in 1873. 52 pages, semi-monthly.

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ABOUT DISCOUNTS

EVERY bee-keeper in the United States should fully understand the advantages of the early - order discount offered by all the dealers in Root's Goods.

There are three ways they affect you personally.

First.—You save money on every dollar's worth of goods you purchase before the rush season. Just for convenience in figuring we will assume that you will need \$100.00 worth of supplies.

The discount for February is 4 per cent. If you put off ordering until April 1st you obtain no discount. Thus, for being TWO months forehand you save \$4.00; and \$100.00 drawing 6 per cent interest for this time would earn only \$1.00. But you earn four times as much—24 per cent. Worth while now, isn't it?

Second.—You have losses in more ways than mere money. During the next few months you will have times when you have ample opportunity to nail your hives and fit your supers—time enough to do a first-class job of it. After April 1st every thing is hurry, hurry. Wasn't that the case last year? Now imagine your hives all stacked up ready for new swarms, and supers ready to go on at a moment's notice. All ready! That's what makes a successful bee-keeper. Twenty-four hours' waiting would mean a great difference in the crop. Worth a little thought just now—no?

Third.—You save annoyances all around. If you wait until April 1st, every chance is

that you will fail to receive your goods promptly. The agent will be out of goods or the factory behind with orders, or the railroads will be unearthly slow in delivering the goods; bees swarming; honey rolling in; no supplies. Ever been in such a pinch? Just think, too, how much trouble you will save other people. Why not try the safer plan this season?

You have nothing to lose. Almost any

one can figure very close his needs only 2 months in advance. A few extra supplies will keep without deterioration till next season. Better sure than sorry.

But how can the manufacturer and agent afford to give such liberal discounts? It's very plain. Under ordinary circumstances 75 per cent of their business comes within four months of the year. That is 25 per cent in 8 months. Those eight months are a worry. Then they need money, work for their employees, room for the stock which they must carry. That's why they need your orders then, and are glad to pay for them—just what the discount is.

The discounts are as follows:

February, 4 per cent; March, 2 per cent; after April 1, no discount. These discounts apply to all goods listed in general catalog intended for next season's use.

Let's co-operate!

4 per cent

The A. I. Root Co. Home Office Medina, Ohio, U.S.A.

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This protection not only enables the bees to rear more brood, but saves it from destruction in any cold

P. S.—Each new subscriber for 1906 will receive, free of charge, any back numbers of 1905 that may still be on hand. At present I can send a complete set excepting the January, February, and April issues. March is getting pretty low. As long as they last, however, any numbers that are left will be sent free.

snap that may follow, thus greatly increasing the number of workers that will be ready when harvest comes.

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IN BEE CULTURE



A Journal Devoted to Bees, Honey, and Home Interests
Illustrated : Semi-monthly : One Dollar per Year
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A GOOD DEAL was said in European journals, some time ago, about increased surplus from having entrances at top of brood-chamber. Adrian Getaz speaks rather favorably of it in *American Bee Journal*. He says not a crack must be left below, and the entrance above must be smaller than if below.

A. I. ROOT's conundrum, page 161, is a tough one. Very hard to get away from the supposition that two virgins were in the hive at the same time. Ready to grasp at any other solution that may be offered. "There was very little brood in any hive." Possibly at such times of inactivity sisterly rancor is not quite so rancorous.

LOUIS H. SCHOLL, in *American Bee Journal*, says he made cakes of candy by pouring the hot syrup into pasteboard boxes of the right dimensions for a single cake, the boxes first being lined with a sheet of butter-paper. The paper was easily peeled off after the cakes had hardened sufficiently. The boxes can be used over again several times, relining them with paper by simply placing a sheet over them and roughly pressing it down with the fingers.

W. Z. HUTCHINSON, in his new book, speaks of the Heddon honey-board as indispensable for the production of comb honey. But he holds to $\frac{3}{8}$ as the proper space over top-bars. If he reduces that to $\frac{1}{4}$ he may find, as I found, that, although burr-combs will still be built, they will be so greatly reduced that honey-boards may be discarded.

He also gives $\frac{3}{8}$ as the distance bees leave between two faces of sealed honey. In this locality it's $\frac{1}{4}$. [In 1886 or '7 I made some quite elaborate experiments in testing $\frac{1}{4}$ and $\frac{3}{8}$ spaces over frames in connection with thick top-bars. To me the results were very convincing: viz., that the $\frac{1}{4}$ inch allowed very much less burr-comb, and was just as good in every other way. Then I discovered that the space that the bees seemed to prefer between sealed combs was $\frac{1}{4}$ inch.—ED.]

THIS WINTER there are likely to be some bee-keepers south of the 40th parallel surprised to find colonies starved that they thought well supplied with stores, because of the unusual consumption caused by the unprecedentedly warm weather. On the other hand, further north the consumption should be less than usual, owing to the same warmer brand of weather. [Yes, indeed, these mild winters are liable to leave many colonies short of stores in the spring, with the result that some of them will starve unless taken care of. I know of nothing better than a good comb laid on top of the frames. When this is not obtainable a chunk of Good candy as big as the fist is a very good substitute. But, say—our mild winter changed about a week ago, and we have been having almost zero weather ever since. I fear now that a good deal of the brood that was started by the outdoor bees during the warm days of January will be chilled; and, in addition, the bees that try to hover over it. Score a point for cellar wintering, even for mild winters.—ED.]

A THREE-COMPARTMENT mating-box "departs from the shape of a cube, and is liable to result in one of the clusters being left without the advantage of the combined heat of the cluster on the side next to it," p. 140. The departure from the form of a cube does not count in this case. Take two rooms, side by side, a stove in each, the two rooms

forming a cube. If, now, a third room precisely similar be added with its stove, certainly neither room will be made colder. The other objection is valid if there be two combs in the central compartment, for in that case the bees of the center might form a sphere with one of the outside compartments, leaving the other compartment to itself. But if the middle compartment has only one comb, as mentioned on p. 69, and has as many bees as either of the other compartments, then there ought to be no loss of heat by the addition. [But the condition of two or three living-rooms is hardly the same as that of the nuclei referred to. When there are two halves of the cluster, one on each side of a partition, these two portions of the bees will fare a good deal better than that other portion that can not get anywhere near the other two bunches of bees that are practically one. If you could divide a cluster into thirds by means of division, then your three-compartment box would be all right.—ED.]

"THE MORE propolis I have, the more I want Hoffman frames with short rests," says M. A. Gill in *Review*. And M. A. Gill is nobody's fool, either. [When I first introduced the Hoffman frame to the bee-keeping world in 1890 and '91, I followed, as nearly as possible, the original type used by Julius Hoffman, the inventor; but I could not follow the style of his hive; and right here unwittingly I ran against an obstacle. It was this: Mr. Hoffman covered the ends of his top-bars with a quilt so the bees could not get to those ends and propolize them to the edge of the rabbet. He had no bee-space on top of his frames, and it was perfectly feasible for him thus to protect them. I saw at once that the hives that were in general use at the time with a bee-space on top would require a change in the frame. We narrowed down the paddle-like ends of the top-bars, reducing the point of contact, thinking that would overcome the difficulty; but it accomplished the result only in part. Then we discovered that, if we made a bee-space *around the ends* of the top-bars, there would be no propolis sticking. In my opinion the shortened top-bars are so immeasurably superior to any top-bars which the bees glue fast to the rabbets that I can not see how any one can prefer them. The only possible objection that can be urged is the lack of finger room; but as I never handle the frames at these points, but always grasp the top-bar just inside of the end-bars, I am not troubled in this respect. Well, to make a long story short, I can only say that I agree with friend Gill perfectly.—ED.]

I REMEMBER the time when slavery was thoroughly entrenched in the land, and men in northern pulpits defended it. I remember the time when it was as respectable to sell whisky as to sell beef. To-day slavery is only a memory, and about one-half of the territory of the United States is under prohibition, and liquor-selling is under the ban even where it is legalized. Do you sense the progress that has been made? [The

world does move right here in Ohio. For example the Toledo *Blade* reported the other day that there were thirteen strong temperance bills before the legislature of Ohio, with the probability of at least half of them passing. It was not more ten or twelve years ago when the Anti-saloon League of Ohio could do no better than to get a temperance bill into a committee, where it would be promptly killed by putting it in a pigeon-hole. Then later on, when the League succeeded in getting a bill reported favorably out of the committee they thought they had done well, even if the bill was killed in the House. A year or so afterward, enough progress had been made so a temperance bill was finally passed by the House by a majority of one or two votes, but it was killed in the Senate. Four or five years ago one bill went through both Houses, and became a law. When a governor two years ago went so far as to threaten to veto a temperance bill unless weakened by amendments, there was such an outburst of popular indignation, that, instead of being elected by over 113,000 majority, as he was the first time, he was defeated by over 40,00. The tidal wave that threw him out of office also elected a lot of men favorable to temperance; so that to-day we have actually thirteen bills in the hopper, with the prospect of half of them passing. What is being done here in Ohio is being done to a greater or lesser extent in all the States. Never was there a time when the temperance matter was so much of an issue as now, and what is more this great reform will come without bloodshed.—ED.]

I AM GLAD, Mr. Editor, to discuss with you the important matter of pure vs. mixed stock. Your views in the footnote, p. 140, are entirely correct, and I see that I am likely to be misunderstood. Let me define my position more clearly. I do not believe that my stock is unusually good *because* they are hybrids, but in spite of it. I believe with you that the same intelligent care in selection with pure Italian stock will result in as good honey-gatherers as with crosses, *provided* one is situated where one can keep them pure. Moreover, if I had two colonies equally good as storers, one pure and the other a cross, I should much prefer to breed from the pure stock, among other reasons an important reason being that I should feel more sure that the pure stock would keep up to the mark in future generations; in other words, that the pure is more nearly a fixed type. But in deciding on a course of action one must take into consideration all the conditions. Please keep in mind also, that, in trying to breed for improvement, the tendency to sport plays an important part, or, to put it in coarser terms, the element of chance. Keep in mind also that I am surrounded on all sides by blacks and crosses, and to keep Italians pure is impossible. The only way to keep as nearly pure as possible is to introduce constantly fresh blood that is pure. I did that for years. It so chanced that, in a number of instances, hybrid colonies did better than any of the

pure bloods. I ignored that for years, but finally concluded that I would not lose my chance on increased yields by being too much of a stickler for pure blood, and I began breeding from the best storers without regard to color. The result is that I think my stock is considerably better than the average pure stock. But don't understand that I am entirely sure I have taken the wiser course. It is just possible that, if I had always insisted on pure stock, I might have reached the same degree of excellence in the end without the disadvantage of mixed blood. I wish I knew. You ask me to tell you, Mr. Editor, what my present stock will do, and then you think you can pick out Italians that will do as well. That's hardly germane, for you have no stock that have been working under the same conditions as mine, so how can you compare? But I'll gladly tell you any thing you want to know about the results I get, and perhaps it will answer your purpose to say that the best I ever had was 300 sections (not pounds) from one colony.

Now let me ask you a question: Suppose that at that time no pure stock gave me more than 250 sections; would you advise me to breed from the pure or the mongrel? In any case, go ahead, and see if you can "pick out pure Italian stock that will average as much as my er—well—mongrels." I'll be more pleased than you if you can. [I am glad you indorse my views. But look here, doctor, are you not to blame because your locality is made up of black bees and hybrids rather than all pure stock? If you had, twenty years ago, every year raised a large number of pure Italian drones, trapping out all other undesirable stock, you, the largest bee owner, would have so Italianized your locality that it would to-day, and for that matter years back, be one of pure stock. The only trouble is, you simply followed along with the swim, not making any effort to introduce pure stock. As I remember, your policy has been to get an imported Italian queen, not to Italianize, but to keep up a fair grade of hybrids. Nearly all the queen-breeders in the country have Italianized their localities by simply raising more Italian drones than the neighbors would be likely to raise of blacks. The result would be that the yellow stock would run the inferior blood out. Some bee-keepers go further and give their neighbors young virgin Italian queens. During the swarming season most of them will be liable to have a surplus of these, which, together with a large number of Italian drones, will soon change the complexion of the bees. If you had done this, then all these years you might have enjoyed a larger immunity from bee-glue and stings, and you would have had the further advantage that your breeding stock would be more liable to duplicate itself, because, as you say, it would have been of a fixed type. If I didn't have pure stock to equal the work of my mongrels, I would get a pure queen from some queen-breeder or bee-keeper that would.—Ed.]



WE shall have to beg the indulgence of some of our correspondents for our delay in publishing matter which they have sent in. Just now we are overwhelmed with copy, some of which we are holding for a more seasonable time, and other portions until such time as the makeup and other conditions admit of their insertion. We hope to catch up in two or three issues.

LIVE-BEE DEMONSTRATION WORK IN YORK STATE.

IT is but fair for me to acknowledge that I got the idea of giving live-bee demonstrations inside of a wire cloth cage from S. D. House, Camillus, N. Y. He has been practicing this method of advertising his honey business at the Syracuse fair for several years. I have asked him to write up his experience, which he has promised to do. Mr. L. F. Wahl, another York State man, has also worked on the same plan, and he likewise will tell us his experience. I know of no method in the world that will popularize honey any quicker or any better than this live-bee work. To an outsider it looks like a piece of dare-devil work; but to an experienced bee-keeper it is no more than playing with a kitten that will use her *claws* if not handled properly.

Since writing the foregoing I have returned from the Michigan convention, and learn that it was Mr. R. F. Holtermann who first practiced this live-bee demonstration work in a cage in Canada. While visiting Mr. S. D. House he communicated the idea to him. I picked it up from Mr. House, and Mr. Holtermann learned it from his British cousins. There, now you have the chain of connection.

DEATH OF TWO PROMINENT BEE-KEEPERS.

I VERY much regret to have to announce the death of Mr. Ira Barber, of Eddy, N. Y., which occurred the 27th of January. Years ago Mr. Barber was a frequent contributor to the bee journals, especially on the subject of wintering. He advocated wintering in high temperatures with little or no ventilation, and was very successful in bringing his bees out in the spring. This would seem to be contrary to the teachings and experiences of the most of us to-day; but evidently there were some conditions which he had that made his method of wintering a success where it would have been a failure with others without those conditions.

I also regret to record the death of Mr. J. M. Hooker, on January 31, at the resi-

dence of his son, 4422 Chestnut St., Philadelphia. Mr. Hooker, whose picture I showed on page 1134 of last year, was at one time one of the leading bee-keepers of England. He was closely associated with such men as Thomas Wm. Cowan, Frank Cheshire, and others, and, moreover, was prominent at the bee conventions and bee shows of Great Britain.

SEMI-HIBERNATION ON THE PART OF BEES;
SOME EXPERIMENTS IN CHILLING AND
FREEZING BEES TO DETERMINE HOW
LONG LIFE MAY BE SUSTAINED
UNDER SUCH CONDITIONS.

I AM well aware that hibernation was exploited about 20 years ago, and it was generally decided, and rightly, too, that bees did not hibernate in the ordinary sense of the term (see *American Bee Journal* for 1885). But they do go into a quiescent state when the temperature has been lowered; and this state is somewhat analogous to the torpor experienced by some animals in a state of true hibernation. A hibernating animal enters into a sort of sleep, during which no food is taken and respiration is considerably reduced. Dr. Marshall Hall has stated that "respiration is inversely as the degree of irritability of the muscular fiber." If the respiration is reduced without this irritability being increased, death results from asphyxia. Hibernation is usually induced by cold; and the animal under its influence attains nearly the temperature of the surrounding atmosphere. But the hibernating animal can not resist *any* amount of cold, although its capacity for doing so varies according to the animal. Some animals bury themselves in holes, like snakes and frogs; others, like the bear, crawl under a pile of leaves and brush where they are still further covered with snow. Thus buried they will go all winter without food or water; but there is a waste of tissue. Fish may be encased in ice and still live, I am told. A lively frog, as our Mr. Pritchard testifies, may be dropped into a pail of water four or five inches deep, and exposed to a freezing temperature. Indeed, there may be a thin coating of ice formed over the animal. The next morning, that frog, though stiff and cold, can be warmed up into activity. Mr. Pritchard then tried the experiment of giving the frog a solid freeze-up, and it died. Whether the pressure of the ice crushed it, or whether it was the actual cold, or both, we can not say.

Flies, as is well known, will secrete themselves in window-frames and other hiding-places, subject to cold atmosphere, for weeks at a time, and yet on exposure to warmth they will revive. As is well known, also, ants have been repeatedly dug out of logs, frozen solid — in fact, fairly enveloped in frost; yet on exposure to warmth they will come to. Some hibernators can endure a freezing temperature, while others, like the bear, woodchuck, and the like, can not. Other very interesting incidents may be taken from natural history; but the purpose

of this article is to consider whether bees go into a quiescent state that *approaches* hibernation, in which there is low respiration and a small consumption of stores. A year ago last summer we put a number of cages of bees with some queens (laying the cages down on cakes of ice) in a refrigerator. The bees were chilled to absolute stiffness. Every day we would take out a cage, and each time the bees would revive, including the queen. This thing was continued for several days, and yet the bees would "come to" each time.

The strange part of it was, that the queens went on laying normally when put back in the hives, instead of laying drone eggs as we expected. Just what the temperature to which these bees were subjected was I can not say — probably something below 40 and something above 35, for the doors of the refrigerator were frequently opened, and the ice was constantly melting.

During the past winter, when a cold snap came on, the temperature going down to zero, we put out some cages of bees, exposing them to the cold wind, which was then blowing a pretty good gale, when the temperature was 5 above zero. I had expected that the bees possibly might be able to survive the shock for a number of hours, and yet revive; but 20 minutes of zero freezing was sufficient to kill them outright. I believe if we had taken the bees and gradually acclimatized them to the cold, first subjecting them to 40, then to 35, and gradually down to the zero point, they would have withstood the shock better.

When the weather warmed up a little we took several cages of bees and buried them in the snow, leaving with them a thermometer so that we might know the absolute temperature. We went out and got a cage of bees about every two or three hours, and we found that we could revive them without difficulty; but at the end of 24 hours the bees, when they "came to," seemed somewhat the worse for the experience. The temperature in the snow played around the 32 mark. But the experiments conducted during the summer would seem to show that bees might stand a temperature of 38 for a number of days.

We know it to be an absolute fact that the bees on the outside of a ball or cluster, in the case of an outdoor-wintered colony, will often be chilled stiff while those inside will have almost a blood temperature. It has occurred to me that, during very severe weather, the inside bees may be gradually replaced by those within the cluster; for we know there is a constant movement of the cluster. Experiments show that a bee that has been starved will not stand as much cold as one that is well filled. Bee-keepers who have had any experience in wintering outdoors know how repeatedly they have taken clusters of bees that seemed to be frozen stiff, yet when warmed up before a good fire would revive and appear as lively as ever.

In view of the experiments we have thus far conducted, it would appear that bees

might be able to stand a temperature of 40, or slightly below that, for a number of days; that if a warm spell does not come within a week, or perhaps less, those bees in their chilled condition will starve to death. But if it warms up, the cluster will unfold and the bees will take food, when they will be ready for another "freeze." I have repeatedly seen clusters of bees, after a prolonged zero spell, lasting a couple of weeks, that were stone dead; but the honey had been eaten from all around them within a radius of an inch or more. If a zero spell of weather continues more than a week or ten days, we always find some of the weaker colonies frozen to death in the spring.

I have given a few facts for our readers to consider. Understand, I do not claim that bees hibernate, nor yet do I stand sponsor for the idea that they may assume a state of semi-hibernation. In the language of Dr. Miller, I "don't know." But there are a few interesting phenomena in connection with chilled bees, their quiescent sleep, their low respiration, their light consumption of stores, that simulates a condition of semi-hibernation. The bee in a chilled condition can go only a few days without food, while a bear, a true hibernator, may go all winter. When the temperature of a beecellar goes up to 50 or 60, the bees are active. Their respiration is normal. They must have ventilation, or die in large numbers. If we can maintain a temperature down to 45, with slight variation, there is a state of sleep where the respiration is very low, food consumption slight, and consequently fresh air is not needed, or no more than what will percolate through the walls of the repository. We know that, in true hibernation, respiration is low and no food is taken. Now, then, I ask the question, Is it possible that bees assume a state of torpor that is about midway between that of true hibernation and the sleep of ordinary warm-blooded animals that are aroused at intervals of a few hours to be fed? We are continuing our experiments in freezing bees, and are willing to sacrifice several colonies if we can only learn something.

There is a practical side to this matter; for if we can induce semi-hibernation or torpor we cut down the consumption of stores. Doolittle's cellar comes pretty near giving us a condition where no ventilation is needed and the stores consumed are slight.

MRS. H. G. ACKLIN; SEE FRONT COVER.

ONE of the most successful lady beekeepers is Mrs. Helen G. Acklin, of St. Paul, Minnesota, whose picture appears on the front cover page of this issue. She is well known in Wisconsin, for she attends the conventions; in fact, she finds she can not afford to miss them.

Mrs. Acklin is a native of New York, but removed with her parents to Wisconsin too early in life to have any clear recollection of the Empire State. She attended country school, and later a village school, fitting

herself for a teacher. The honey-bee always attracted her, and she fully resolved, when in her teens, to own some bees sooner or later. That time came soon after her marriage; for before the house was finished some bees were on the lot, Mr. Acklin having made her a present of seventeen colonies in American hives. Those bees should have had three crosses before their signature, and the frames were literally glued to the hives and to each other. It took a strong man to pull them loose, and one can imagine the consequences. Nevertheless, with Mr. Acklin's assistance they were soon transferred to Root hives. A woman with less perseverance and less love for the busy bee would have given up the adventure in despair; but Mrs. Acklin kept on, learning something by experience and from the bee books, and from Mr. Acklin in the brief intervals he was at home during the day. Gradually the cross bees were replaced by gentle stock, and life became, once more, worth living. Even then, disaster sometimes came. Water overflowed the apiary, running sand into the hive-entrances and smothering the bees. The cellar filled with water, and each colony was enjoying a ride when rescued by men with rubber boots and long poles. But as progress is the watchword everywhere, so it is with Mrs. Acklin and her bees. From that small beginning have come hundreds of colonies and several out-apiaries. Mrs. Acklin has charge of a large queen-rearing apiary located at her home, and finds time for her class of girls in Sunday-school and various other church interests, as well as the bee-keepers' associations.

A NEW IDEA ON BEES AS POLLINATORS.

WHILE Secretary Hunt and myself were eating dinner at the hotel in Jackson during the Michigan convention, a gentleman came in and sat down at the same table, and, after listening for a few minutes, he remarked, "You are bee-keepers, I judge." To this we assented. He then said, "I want to tell you something that perhaps you did not know before. Did you know that bees would actually change the flavor of fruit? For example, I never dare raise pumpkins near a large watermelon-patch, because the bees, you see, mix the pollen of the pumpkins and of the melons so that the melons will taste like pumpkins and the pumpkins like melons."

Mr. Hunt's eyes began to dance.

"Oh! now you needn't smile. These are facts. Why," he continued in all soberness, "if I want to raise good melons I always scatter a lot of sweet-clover seed around the outside of the patch. Well, the bees stop on the sweet clover, then go into the patch and mix the pollen of the sweet clover with that of the melons; and the result is I get the finest melons anywhere in the country. They have an actual honey flavor."

This pumpkin yarn would make a first-class story for "boiler-plate" newspaper

matter and it would be just as true as some of the stuff that is published.

THE MICHIGAN STATE BEE-KEEPERS' CONVENTION.

THIS was held at Jackson, Feb. 1 and 2, and it was one of the most successful meetings I ever attended. Something over a hundred of the most representative bee-keepers of the State were present, including several from Ontario and a few from other States. There were only two or three papers read, and these were short and to the point, calculated to incite discussion, which they did. The rest of the meeting was made up of off-hand discussions based on a series of questions carefully prepared by the officers in advance. These questions were sent out with the announcements so that every bee-keeper would have time to think them over and come prepared.

The sensation of this meeting was the Aspinwall non-swarmling hive, which was indeed a curiosity. When any one has claimed that he had a non-swarmling hive for the production of comb honey I have been in the habit of saying to myself that he had a whole lot to learn yet about bees. But when Mr. Aspinwall first gave an inkling of his idea at the National convention in Chicago, and later exhibited the principles in a hive which he had been testing for a couple of seasons, and which had not only enabled him to control swarming but to double and treble his comb-honey crop, I felt satisfied that here was an exception, and that he had struck on to a line that was new as well as valuable. Some of the best and most expert bee-keepers were present; but none of them were inclined to believe that it was the same old story over again — a will-o'-the-wisp.

Mr. Aspinwall is very conservative, and draws his conclusions with the precision of a trained scientist; and when I say that he is probably as familiar with the general subject of swarming, and the causes that lead up to it, as any other man in the United States or perhaps in the world, I do not feel that I am far from the truth.

If you could see the hive and note its odd construction you might almost wonder if it was not an incubator, a creamer, or, mayhap, a bee-hive. Indeed, when I saw it carried upstairs, and knowing the dairymen were in session, I concluded it was some new dairy contrivance, little dreaming that it was a bee-hive until I saw it among the bee-exhibits in the convention room.

The principles that Mr. Aspinwall has incorporated in his hive are decidedly new. Yes, I am sure that nothing like it was ever designed before; and until the real theory of it is explained, if you did not know the "man behind the gun" there would be a sort of feeling mingled with pity for the poor dupe who would waste any time or money on it. But I wish to say to our readers in all seriousness, I believe Mr. Aspinwall has something that will come nearer

solving the problem by mechanical appliances than was ever placed before the bee-keeping world. It would be useless to attempt to give a detailed description of it at this time. Later on I hope to give illustrations with descriptions from the author that will explain the whole thing. For the present I will merely state that the hive proper is a good deal larger than the ordinary hive, but uses actually no more brood-frames. Each frame is separated from every other frame by what I might call a bee-spaced dummy. Perpendicular cleats $\frac{3}{8}$ thick and $\frac{3}{8}$ apart, one inch wide, edges toward the combs, are secured to the top and bottom-bar of a frame. This makes a clustering space for bees one inch thick between each two combs of brood, except for the perpendicular cleats referred to. The inventor explains that with this hive there will be no clustering out, for there is plenty of room between the brood-frames in a space where the bees will not build combs unless they fill up a multiplicity of bee-spaces, which of course they will not do. The same general plan, the same kind of bee-spaced dummy, is placed between each row of sections.

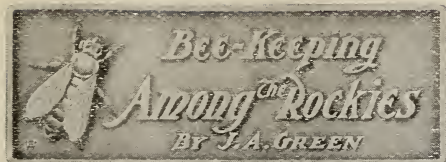
There, I will not attempt to describe it further, any more than to say that the hive will cost a good deal more than regular hives; but, as Mr. Aspinwall says, if you can thereby double your honey crop without swarms, you can well afford the extra expense.

The whole hive and system have been made the subject of several patents, and in any event I think the bee-keeping world will respect Mr. Aspinwall's rights. He has spent hundreds of dollars in developing his idea; and if it should continue to show up as well in the next two or three years he will have it ready for the public. In the mean time he says to one and all alike that he has no hives for sale. For the present, at least, he will perfect the hive; and then when he has thoroughly demonstrated that it will do all he claims for it he will furnish it to the bee-keeping world.

Mr. Aspinwall is already a successful inventor, and his name has been attached to a potato-planter, as well as some other useful devices that are well known. He was one of the first to recognize the value of plain sections, and he is still a user of them, for, indeed, they are a part of his new hive; only, instead of using fences or separators, he uses his beeway dividers, or dummies, as before explained.

There were many interesting things that occurred at this convention. While the Aspinwall non-swarmling hive was the sensation of this meeting, there was a great deal of valuable discussion which, if it had been put in shorthand, would have made about as interesting bee matter as one can often find.

President Hutchinson and Secretary Hunt did much to make this meeting a success. The former drew out discussion while the latter had done a vast amount of work in working up the convention. Both were re-elected, as they deserved.



In my article on foul brood in apiaries run for extracted honey, on page 1299, a mistake occurs that reverses my meaning. I meant to write that, in extracting an apiary, any colonies showing any trace of disease should be extracted from *last*, with proper precautions about cleaning up the extractor afterward. But by some slip, either of myself or the compositor, I am made to say that they should be extracted from *first*. This would not be good practice.

We have had warm weather here for some days, and the bees have had good flights. Most of them are alive so far, but I look for a heavy loss in the spring. Many bee-keepers did not feed their bees any thing in the fall, although they knew they were light, and a great many will not have honey enough to carry them through. Many others went into winter quarters so few in numbers, and with so large a proportion of old bees, that, even if they survive the winter, they are likely to dwindle in the spring.

Most of the Colorado honey exhibited at the St. Louis World's Fair came from the counties of Mesa and Otero. A rather laughable result of this was the awarding of a gold medal jointly to these two counties for their honey exhibit. Some of you may appreciate the joke better if I remind you that Mesa and Otero counties are separated by over two hundred miles of mountains as the crow flies, and by about fifteen hours of travel by rail in as straight a line as the aforesaid mountains will permit. Consequently a joint award is very much like making an award jointly to Massachusetts and Maryland. How that medal is going to be divided up is a conundrum that I believe has not yet been answered. As the Superior Jury of Awards has gone out of existence, there seems to be no way to have the blunder corrected.

Some time ago I made the statement that making a section larger, either by making it higher or wider, or by making it thicker, would make greater the difference in weight between the lightest and heaviest sections. Dr. Miller challenged the truth of this; and, though I showed that I was correct in the latter part of the statement, I must admit that, theoretically, I was wrong in the former. I delayed saying any thing more, thinking that I would make some experiments to see how nearly theory and practice would agree, but the matter escaped my mind until now.

The section that I use is always lightweight, averaging only a little over three-

quarters of a pound. I should like to have them heavier. I am sure that I can not do this by making them thicker, except at great loss. I would make them higher, $4\frac{1}{2} \times 5 \times 1\frac{1}{2}$, if it were not for the expense, annoyance, and complication that such a change would make in a large apiary already well supplied with fixtures adapted to standard sizes.

WIDTH OF SECTION.

I presume, Mr. Editor, in correcting Dr. Miller for assuming that the $4\frac{1}{2}$ plain section is $1\frac{1}{8}$ thick, and in yourself assuming that "as a matter of fact" the $4\frac{1}{2}$ square plain is $1\frac{1}{8}$ thick, you simply mean that the majority of the square plain sections used are of that thickness, although you state that, so far as you know, there are no $4\frac{1}{2}$ plain, $1\frac{1}{8}$ thick. Let me quote from the catalog of the A. I. Root Co.:

"The regular size of section hitherto has been $4\frac{1}{2}$ square by $1\frac{1}{2}$, with the usual beeway. The same section without beeways will be $1\frac{1}{2}$, and will hold about the same amount of honey. The old seven-to-foot with beeways will be $1\frac{1}{8}$ without beeways."

Further on, on the same page of the catalog, we read, "Widths of . . . sections generally kept in stock . . . plain sections $1\frac{1}{2}$, $1\frac{3}{8}$, $1\frac{1}{2}$, and $1\frac{1}{4}$." Again, in quoting prices, "Plain, no-beeway sections, $4\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$, $1\frac{3}{8}$, or $1\frac{1}{2}$. . . in lots of 1000 or more, will be 25 cents per 1000 less than prices named above." Now, would not any one be justified in assuming that the $1\frac{1}{8}$ square section was one of the regular sizes? "As a matter of fact," I have used them for five or six years, have a considerable stock of them on hand now; and if I continue to use plain sections I will continue to use that width unless I succeed with some experiments now under way, in which I hope to use $1\frac{1}{2}$ plain sections with the same thickness of comb I now get with the $1\frac{1}{8}$ plain or seven-to-foot regular, in this way getting rid of some of the worst defects of the plain section.

I am afraid that I am unalterably in favor of the thin section. Although there are some inconveniences to be met in the production of light-weight sections, I would rather put up with them than to go back to the old-style thick-comb section.

Did it ever occur to you that a great deal of the sentiment that has grown up in favor of 4×5 sections and plain sections is not due to either the size or shape of the section, or to the fact that the combs are built between fences, but simply to the fact that the combs are thinner? Do not understand me as saying that this accounts for all of it, because some who like these things have not used the thinner sections. But a very large proportion of the testimonials in favor of fences and 4×5 sections come from those who have changed from the $1\frac{1}{8}$ section, equivalent to the $1\frac{1}{2}$ plain, to the $1\frac{1}{8}$ plain. They have found that they got more honey, plumper sections, and better finish, and they have laid it to the shape of the sections, the kind

of hive, or the style of separator, but never a word as to what is, in my opinion, the principal reason, the employment of a section permitting a thinner comb, more like what the bees build naturally.

KEEPING A DIARY.

A very important thing to the bee-keeper, as well as to almost any other man, though more especially to one engaged in any of the rural occupations, is the keeping of some kind of record of the principal events of his business with relation to the season, weather conditions, etc.

The keeping of a regular diary, with a fully written record of each day's doings, is so burdensome that most people soon abandon the whole thing in disgust, and will not attempt any thing of the kind; yet something of the kind is desirable, and is much more valuable if some system is adopted that permits of a ready comparison of one year's record with that of others. I have used with a great deal of satisfaction the "Line-a-day" diary, a little book in which each page, headed with the day of the month, is divided into five spaces, each intended for a year's record. This space is enough for ordinary records, though not enough to tempt one to prolixity. As you make each record you have before you the record of that day in each year since you began to keep the diary, the book serving for five years' use. The recording of only a few things, such as the time of blooming of certain flowers, the condition of the bees on certain dates, the time of the first swarming, or the date and duration of the various honey-flows, will enable you to keep your business in hand much better than if you left these matters to memory. If you wish, you can make entries ahead, of things to be done on certain dates. Then if you keep in touch with your book you will be much better able to carry out those plans you should have been making for the next season's work. Begin this now, and see if you do not like it.

EXTRACTING HONEY FROM COLONIES SLIGHTLY DISEASED WITH FOUL BROOD.

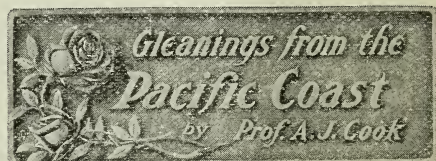
Elmer Todd still seems to think that I have misrepresented him in my comments on pages 807 and 1298, and in a communication to the editor he has the following to say: "On page 1298, Dec. 15, Mr. Green says he has carefully re-read my article, and he fails to see that he has misrepresented in any way. Now it is up to me to show him where he did misrepresent on p. 807. In his article entitled 'Extracting Honey from Colonies with Foul Brood' he says I claim, in the *Bee-keepers' Review*, that it is safe to extract honey from a super above a queen-excluder over a colony having foul brood. I now challenge him to point out in that article where I made that claim. What I did say was this: 'A diseased colony that comes up to the expected honey-flow not perceptibly weakened in numbers.' Then in another place I said 'the slightly diseased or doubtful colonies.' He most certainly conveys a wrong impression. He does not de-

scribe the colonies as I did, but quotes me as saying 'over a colony having foul brood.' His language clearly conveys the impression that I said it would be safe with any colony having foul brood, *regardless of the degree of its infection*. His language can not be construed in any other way. His whole article confirms this assertion."

I cheerfully give place to this here, and admit that I did not quote his exact words. It is impracticable, in a department of short items, to elaborate fully on each statement that may be under criticism. It might have been better if I had stated that he meant only colonies that were not badly diseased, though my article on page 1298 shows fully that it was based on that understanding of his position.

Please remember that a colony that is "slightly diseased" with foul brood *has foul brood*, and can convey the disease just as certainly as one that is badly diseased. The difference is only one of degree in the percentage of risk involved in handling it. To extract from even the most slightly diseased along with healthy colonies is gambling on an uncertainty and against heavy odds, since, if you lose, your loss is apt to be far greater than any thing you would gain if you won.

Experience has shown me that some men are unable to detect foul brood until it has made considerable progress. Judgments may vary as to what constitutes a "slightly diseased" colony. The careless and the busy are likely to assume that the disease has not made the progress since the last examination that it really may have. It is because of these things that I have criticised Mr. Todd's conclusions and regretted their publication.



ORDERS OF INSECTS.

We have now considered the lace wings, nearly all of which are our friends, and the locust order, which are as characteristically pests, and we next come to discuss the *Hemiptera*, or bugs. These are the true bugs; and, though many use this word as a synonym of insect, yet it were better if all would follow the entomologist and limit the use of *bug* to this one order—*Hemiptera*.

The bugs take the name *Hemiptera* from the fact that many have the front or primary wings quite different from the posterior or secondary ones, and especially from the fact that these front wings are thickened at the base so they appear like half-wings. Such wings are called "hemelytra." These

are all "haustellate," or possess sucking mouth-organs. All bugs only suck, and never devour the plant or foliage. Yet as an animal may as well lose its life or be totally devoured as to be sucked bloodless, so a plant is as surely killed when it loses its juice or sap as when it is eaten wholly up. Thus we understand why the aphides, the scale insects, and the chinch bugs are such dreaded pests. Like the pseudo-neuroptera and all orthoptera, the bugs pass through incomplete transformations. Except that it is wingless and smaller, the wee young bug is like the mature one. The bugs, like the neuroptera, are divided into three sub-orders: The parasitica, or true lice, which are always wingless, possess a simple not jointed beak, and live by sucking the blood of other animals. These, by preying on our chickens, cattle, etc., do us serious mischief. Kerosene oil and lard, half and half, for our poultry, and a tobacco decoction, one pound of tobacco to two gallons of water for our horses, cattle, and hogs, will kill these lice and save much to our farmers, provided it is wisely and properly used. The first is placed under the wings, about the thighs, along the breast, etc., of the birds, while the other is *thoroughly* applied by sponge to horses and cattle, and with a spray-pump to hogs.

The *Heteroptera* are the true or typical bugs, and always have the front wings thickened at the base. The common squash and stinking bugs are examples. Some of these, like the chinch bug of the middle West, are terribly destructive. While a few, like the stinging bug, kill bees, yet these last kill many of our insect pests, and I believe that, on the whole, they are really our friends. The "kissing bugs" do great good, and very rarely sting us. These, like the other sub-order, possess a jointed beak.

The third sub-order, *Homoptera*, show no marked difference in the wings, while the front wings are the same in character from base to tip, or are not thickened at the base. Here we find the aphids, or plant-lice, the scale insects, cicadæ, etc. Many of these are grievous pests.

As the bugs do not eat but only suck we can not poison them by feeding them the arsenites, but must kill them by some application that kills by contact, like insect powder or kerosene emulsion, or distillate spray. The latter is simply a two or three per cent mixture of distillate coal oil and water, which is stirred violently and thrown on to the plants as a fine spray when thoroughly mixed. This has worked wonders against some of the scale insects in California.

While all of the true lice and all the homoptera are destructive pests, some of the true bugs are our good friends, as they prey upon and destroy other and harmful insects, though many of these are also very terrible pests.

Some of the scale insects furnish us with important commercial products. The cochineal insect, which infests the cactus-trees, gives us our valuable red dye or coloring

material, while the lac insect of China and Japan gives us the shellac of commerce.

It only remains to be said that we can never kill these insects by the use of Paris green or other like poisons; for as they suck they pass their sharp beaks right through the poison, and so do not take it into their blood. We may, therefore, be sure that it will count for naught to use such substances in fighting such pests as chinch bugs or plant-lice.

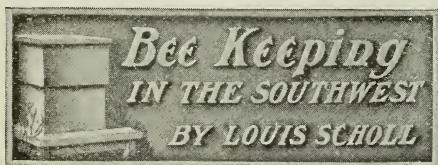
Just a word more about the kissing-bugs. There are several of these. They are large, and have long narrow heads. One at Claremont is beautifully colored, though most are gray-black to black in color. The sting which they inflict as they puncture with their beaks is often quite poisonous and painful. I suppose the name came from the fact that one may have stabbed some person on the cheek or may be lip. I regret the name, as I like to associate the kiss with things pleasurable.

THE NATIONAL ASSOCIATION.

The union among bee-keepers, which I believe was originated by our friend the late Mr. Newman, as a protective agency to insure bee-keepers against unjust attack and persecution by those who had an unreasoning prejudice against bees, has done grand work in the line first intended; and under the exceptionally wise and able management of Mr. Newman it was a tremendous power for good. Now, owing to less prejudice and more and better information, there is far less of that work for it to do, and it may well turn some of its energies to other aid. As I see how little honey there is in Europe, and how wretchedly it is prepared for market, I can not but think that here is, as I have often urged, a splendid place for both our organizations for advancing apiarian interests in America to put in telling strokes. I see great dark irregular chunks of honey here, selling for a mark, and often more, a pound. A mark is 25 cts. We all know how cheap transportation by ocean steamer is; and by such reciprocity treaty as may be necessary in countries like this—Germany—where there is often a high protective tariff, and by a wholesome elimination of unnecessary middlemen, I believe our honey market abroad might be vastly improved, both to our own and to the signal advantage of the European consumer. I should like to see a carload of our elegant sections on the market here. Methinks they would go like wildfire. I have repeatedly asked for honey here, only to be told that they had none, or to be shown some that no one would think either of buying or selling in America. Splendid fruit, both fresh and dry, from America, is here in quantity, and sold at a price to please both producer and consumer. The best fruit that we have had came from America, and the dried fruit from over the sea is especially attractive and toothsome. Surely honey would be much easier and safer to ship than is fresh fruit. I hope that intelligent investigation in this line may be undertaken.

BEE-HIVES IN GERMANY.

Surely there is great need of a Langstroth in Germany. So far as I can learn, there are practically no top-opening bee-hives in this country. In general agriculture Germany is away to the front; but in bee-keeping she is surely away in the rear of America. Most of the hives seem to be straw, and generally of the pattern of our box hives, which surely are now an anachronism, and ought in this age to be relegated to the junk-pile. True, there are movable-frame hives. The frames hang on a rabbit as do ours; but instead of being raised or removed from the top they are drawn out at the end. Some hives which I have seen are a meter (about 40 in.) long; and to draw all these frames out at the end after they are well glued in by the bees must be a task to try even the proverbial patience of the Deutcher. I believe that when manipulation must, of necessity, be so laborious and difficult, it would be likely to be all too rare for the good of such bee-keepers as had foul brood, to say nothing of weak and queenless colonies, of bee moth ravages, and the nameless other conditions where inspection is loudly called for. I have been told that many still use the top-bar simply, so that upon removal the combs must be cut free each time from the side of the hive. I have also been told that the great Dzierzon always used such hives, and that he was remarkably expert in such manipulation. It seems unbelievable that a man who could discover the law of parthenogenesis could ever be induced to use such hives after he had seen a Langstroth hive or even read a description of one. I wonder if Europe has many such bee-men as the Dantants and the Grimms. Have we not taken the cream of the land?



In establishing apiaries this spring do not overcrowd your location. Leave plenty of room for an "off" year.

"A thing that can be done, but has not been done in the past to a great extent, would be to direct our attention more to reaching out to secure better markets, to educating the people to know the difference between good and inferior honey, and to educating all in a direction of producing a better and more uniform article," according to R. F. Holtermann, in *Canadian Bee Journal*.

Bee-keeping, poultry-raising, and truck-growing make a combination hard to beat

when it comes to making a comfortable living. While some of us have a leaning toward specializing in one line alone, yet I know of several instances where, if one failed, either of the other two could be relied upon. Now is still a good time to decide whether to give this combination a trial the coming season.

In making preparations for the coming season's work, do not overlook the keeping of a small note-book in which to jot down and keep an account of important items as they happen throughout the season. It is a good idea to make a memorandum of all important matters as one stumbles on to them, or they may be forgotten. It pays. Bee-keeping is just as much business as keeping a store; yet very few would try to keep a store without keeping books.

Chaff hives are unknown to Texas bees. Six colonies lived in such for three years in the experimental apiary of the Texas Agricultural and Mechanical College; but as the bees did not seem to appreciate these costly homes—at least so far as could be determined—they did no better than the colonies in single-walled hives. They were cast out of them and put into regular hives. The unwieldy chaff hives were stored in an anteroom of the bee-house, where they are only in the way.

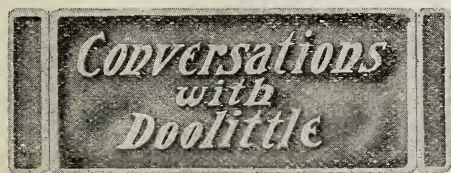
THE ADVANTAGES OF LIGHTER GRADES OF FOUNDATION.

The lighter grades of foundation, rightly used, are better for all purposes. It seems like a waste to use heavy brood foundation and medium brood in wired frames, yet many are doing so. Suppose that a pound of light brood foundation, averaging ten sheets to the pound, costs 50 cents. That would be sufficient to fill a ten-frame hive-body. Medium brood, at 48 cents per pound, would fill only eight frames, necessitating an extra cost of two sheets, or twelve cents per hive, or ten cents over the cost of light brood foundation. While the difference of a single hive-body does not seem a great one, it amounts to a saving of \$10 on every hundred bodies in favor of the lighter grade. The comparison is made on the supposition that both are used in wired frames as many are doing. If unwired frames, with medium and heavy brood foundation, are considered, the difference between these two grades would be about the same as with the other two in wired frames. The heavy brood foundations, running six to eight sheets per pound, although not requiring the wiring of the frames, I would still consider more expensive than light brood with wires.

I have always been in favor of wiring deep frames. The expense in the beginning is slightly more; but as lighter grades of foundation can be successfully used, and the danger of combs breaking out in handling is eliminated, my frames are wired. I have used with much satisfaction home-made foundation running twelve L. sheets to the pound. This was used with four horizontal

wires in the standard-depth frames; but the wires were not imbedded. The sheets simply hang between the wires, two of the wires on each side alternating with those on the other side. If the frames are wired right, and the hives stand level, the imbedding is not necessary, as it weakens the foundation so that it breaks loose at the wires. I have tried thin super foundation in full sheets in this way, and it can be successfully used in the weaker colonies, or by placing it between built-out combs. Swarms can not be hived on such frames, as the foundation tears loose. It works well, however, when building up small nuclei.

The cost of the home-made foundation running twelve sheets to the pound was the same as the manufactured grade of ten sheets at 50 cents per pound. Comparing the twelve-sheet grade with medium brood foundation, both wired, the saving would be increased to 20 cents per hive-body or \$20 for every hundred in favor of the lighter grade. Where several hundred bodies and supers have to be filled with foundation every year this is quite an item.



WHAT HIVE SHALL FARMERS USE?

"Good morning, Mr. Doolittle."

"Good morning, Mr.—what's the name?"

"My name is John Jones—only a farmer, and expect to be such all my life. But I am interested in bees just now, and my neighbor Brown told me I'd better come over and see you regarding the best hive for the farmer who wishes to keep a few colonies of bees for honey for his own use, and perhaps a little to sell, should the bees do well."

"Which will be the best hive for you will depend very much upon how you intend to keep the bees, and how much time you will be willing to devote to them. If you intend to hive swarms only when they issue, and put on the surplus boxes when the white clover commences to bloom, as is the case with the majority of farmers who keep bees, paying no attention to them otherwise, then I should say some simple box hive, something after the fashion of the old Miner hive, would be as good as any thing for you."

"That may be right; but what was there about the Miner hive superior to any old box or log, such as my father used when I was a boy?"

"The reason for preferring the Miner form of the box hive is, that all the other box hives or log gums of the past allowed the bees to build their combs in a haphazard

way, while Mr. Miner provided for straight combs by the use of strips running across the top of the hive every one and one-half inches, the same having a sharp edge on the under side, on which the bees would start their combs. With such straight combs in your hives, your bees will bring a dollar or so more per colony, should you ever wish to sell them, than they would were the combs in your hives of the haphazard, crooked kind, as such combs are very easily transferred to other hives by the man who would be most likely to buy bees."

"I see. That would be quite a scheme, and I am glad I asked about the matter. But I expect to devote considerable time to the bees, or as much as I can spare from my other farm work."

"If you are willing to give the bees the time they require, which is far less to each colony, taking the whole of the year through, than you give to one of your horses or cows, then I would say that nothing short of a good movable-frame hive would be good enough for you."

"Well, I want the best, and that is the reason I came over to see you. I have just commenced to take GLEANINGS, and it has set me crazy over the bees—at least, that is what my wife tells folks; and seeing you were answering questions in GLEANINGS had more to do with my coming over to see you than my neighbor's advice. Which is the best frame hive?"

"Well, that is a hard question; for, very naturally, every man thinks the one he is using is the *best*. And, strange to say, nearly every beginner thinks he can get up a hive just a little better than others are using, so goes at it with a relish and a zest worthy of a locomotive inventor, till he finds, after using, that the most of the older frame hives work better than his 'new idea,' which he really thought was going to revolutionize the world."

"I may be one of those fellows later on, but just now I wish to know which is the best of the older frame hives, so that I may have what I need ready for the opening season of 1906. What shall I take?"

"All things considered, especially if you can winter your bees in a cellar, there is probably nothing better for you than the regular Langstroth hive. The word 'Langstroth' would properly apply to all good hives having movable frames, as such movable frames come under Mr. Langstroth's invention; but there is only one hive that bears his name, and that is what I call the regular one."

"How many frames would you use—eight or ten?"

"I would prefer the ten-frame hive, and especially for the farmer bee-keeper, as such hive is liable to have sufficient stores in it after a poor season so that the bees will come through all right in the spring; while with the eight-frame hive they are quite liable to starve unless they are looked after and fed."

"Then bees are liable to starve after a

poor season, when the small brood chamber is used?"

"Yes, and that is not all. I find that, unless much care is used during winter preparation, the colonies in the eight-frame hives do not come out so strong in the spring, on an average, as do those in the ten-frame hive, and this item of strong colonies in the fore part of the season is the main thing to be looked after where the crop of white honey comes early in the season, as it always does where white clover is the chief source of supply, as I think it is in your locality; and the hive which the most nearly accomplishes this object is the one the farmer, or any other person keeping bees, should look after."

"I think I begin to see what you are after. You want the bees strong, or the colonies strong in bees, when the white clover opens."

"Yes. Lots of bees on the stage of action at the time of the white-clover honey harvest means success for their keeper; and I believe that the ten-frame Langstroth hive will give just this, with the least manipulation, of any hive which I am acquainted with; and that is just what the average farmer bee-keeper needs most."

"What is the necessary manipulation to give a ten-frame hive in the spring?"

"The early management of any hive consists in knowing that the bees have a good queen, plenty of stores, and that they are tucked up warm and secure at the top of the hive. Bees will build up, even if the top of the hive has cracks in it; but I think you will easily see that the air which passes out of these cracks takes so much warmth away from the cluster, and causes the bees to burn just so much more fuel (honey) to keep up the required heat inside the cluster, which is from 92 to 98 degrees, when brood-rearing is going on. Therefore it pays well to see that the top of the hive is tight in early spring."

"I should say so, if it requires that amount of heat to rear brood. I did not know what temperature was required."

"Plenty of stores are needed in any event; for if the bees have to scrimp on account of fears of starvation, not nearly so many bees will be reared as there would be were there so much honey in the hive that the bees could use it lavishly. A hive which has twenty pounds of honey in it on the first day of April, will, as a rule, give double the bees at the commencement of the clover harvest that the one will which has only five pounds in it, providing the latter does not starve all together. And that the ten-frame hive is likely to have twenty pounds or more in it on the first day of April is one of the reasons that I recommend it for farmers."

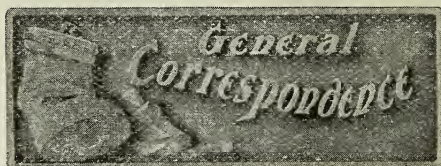
"Then with the good queen, twenty pounds of honey, and the hive fixed warm and tight at the top, the bees will be likely to care for themselves till about the time the white clover opens."

"Yes."

"Then I will go home and make my hives

so that I may be ready when spring comes. Smith has bees in ten-frame Langstroth hives, and he told me he would sell me five colonies in the spring for \$20.00, hives and all. Can I do better than to buy them?"

"I do not think so. That is not an unreasonable price, considering you have the hives with the bees; and by getting one of his empty hives as a pattern you can make all you want from it, and thus your hives will all be alike."



HOW TO INCREASE THE SALE OF OUR HONEY.

Why it Pays to Advertise, and to Give away Samples.

BY E. W. ALEXANDER.

This is a very important subject connected with our business at the present time. I can think of no better way than to do as nearly all the successful business men and manufacturers are now doing — that is, advertise our product in every way we can think of that would be likely to bring trade. This is one thing that we as honey-producers have sadly neglected. If we expect to be successful in producing and selling large crops of honey we must apply the same methods to our business that these successful business men do to theirs. Now as to the manner of advertising, each man must decide that for himself. But advertise we must in some way. It is now high time that we awoke to the necessity of this.

From the little experience I have had in having a small notice inserted in our bee journals, and seeing its effect, I am sure that through them a nice large advertisement would be worth ten times its cost to any honey-producer; and why so many of us, myself included, should be so negligent in this important part of our business is hard to understand. We know we have a good thing for sale — one of the best foods God ever gave to man; so let us join hands and place this before the public in a profitable way. Many business firms give away thousands of dollars' worth of sample packages in order to induce the public to buy their goods; and I sometimes think that, if the honey-producers of this country would give away a small per cent of their honey in sample packages for a year or two, it would go a long way toward bringing honey into more general use. Then when the poorer classes get into the habit of using it on their bread in the place of butter we would surely have

a large demand for all we could produce. Most children are very fond of honey, and will nearly always prefer it to butter if they have a chance. This fact I often noticed in bringing up my family of four children. Here is a tender point with many parents. They will buy for their children many things that they would hardly think of buying for themselves.

This is where the sample package would count big. The child would have some, then it surely would want more; and the indulgent parents would commence to buy, and they too would soon like it, and buy often; but don't make your sample package too small. I would advise about a pound. Be sure to have it large enough to do for a meal or two. A mere taste would amount to nothing. Some may think to give away a pound of honey is rather expensive in order to induce a family to purchase some, so we will do a little figuring along this line.

We will suppose a man has 10,000 lbs. of extracted honey for sale. This at wholesale price will bring him about \$600. Now, if he gives away 1000 lbs. to as many families, and in doing so he finds 500 families that commence to buy his honey at 10 cents, this shows that his customers have cost him two pounds apiece, or 12 cents each; and if they buy on an average 18 lbs. apiece during the season he comes out \$300 ahead, or, in other words, he receives \$900 for the honey he would otherwise have sold for \$600. This \$300 would pay for all expenses of selling, and he would have a nice lot of customers to supply another year that had really cost him nothing. This is a case where it is necessary to sow before you can reap, and, like nearly all other cases, you will reap according to what you have sown. So I repeat, don't be afraid to give away some honey in order to advertise your business.

There is one thing we should all bear in mind; and that is, when we get customers try hard to please them so as to supply them with whatever they may want year after year. No business man can afford to lose a customer if he can help it. First furnish a good article, then offer it at a fair price, and always be square in your dealings. If there is any thing about your honey that is not as it should be, call the purchaser's attention to it. Don't wait until after it is sold, and then let him find it out as best he can. If you do, it is only natural that he will be a little careful about buying of you again. It might be of some help to have a circular go with each sample, telling the value of honey for many purposes, and how the children were delighted to have it on their bread.

I sometimes think that we as honey-producers have never taken just the right course to bring our honey into general use. It is all right to teach the public as to its purity and healthfulness, but that is not enough. We must go still further and show them that they can save money by using it. When this is once accomplished we can then, and not until then, let this question rest. I have

retailed in small lots but very little honey; but I have always noticed that, if rightly done, it is sure to bring good results. If we get a family to commence using honey they are sure to continue as long as we supply them with a good article at a moderate price. We have several customers who buy a 160-lb. keg of dark extracted honey every year for their own family use. They have got used to having it on their table, and they tell me they don't see how they could get along without it. They first started by buying a 10-lb. pail once a year. One man in particular bought six kegs this fall to retail out to his neighbors. This man never bought any honey until four years ago, when a friend of mine sold him a pailful. I speak of these incidents to show how easy it would be to start a large demand for our honey if each one went to work in the right way to bring it about.

Now in connection with the selling of honey let me say a few words in regard to the producing. For some time there has been an almost unlimited demand for dark extracted honey, and but little demand for light extracted unless it is water-white, and can compete with the white honey of California. This white extracted honey is a hard thing for us to compete with, and for this reason I would suggest that we try hard to have all our light honey put in sections, and sold as comb honey, and all our dark honey extracted. This would relieve the comb-honey market to quite an extent, and cause those who prefer dark honey, as many do, to buy dark extracted for their table use. I am often asked what our dark extracted honey is mostly used for. I find out from those who handle large quantities that the Jews are our best customers for this grade of honey. They not only eat a great deal, but use it extensively to make a certain drink which they like during their holidays. One of the largest dealers in honey in New York told me last summer that these people used more dark extracted honey than all other classes put together. Then our large bakeries use considerably more dark extracted than they do light, and it is the same with all manufacturers that use honey. A very intelligent Jew once told me that their people were suspicious of all light honey, but had confidence in dark honey being what it claimed to be.

Personally we have been very fortunate in being able to sell all the honey we could produce, at a good price, as soon as it was ready for market; but I know that many others are not so fortunate, and it is for them that I hope some way will be devised so they may turn their surplus honey into ready money.

In attempting to write on this subject I fully realize that I am not competent to do justice to the question; but I hope you may find in the above some little thread that, when woven in with the knowledge of others, will be the means of bringing a better market to us all.

Delanson, N. Y., Nov. 15.

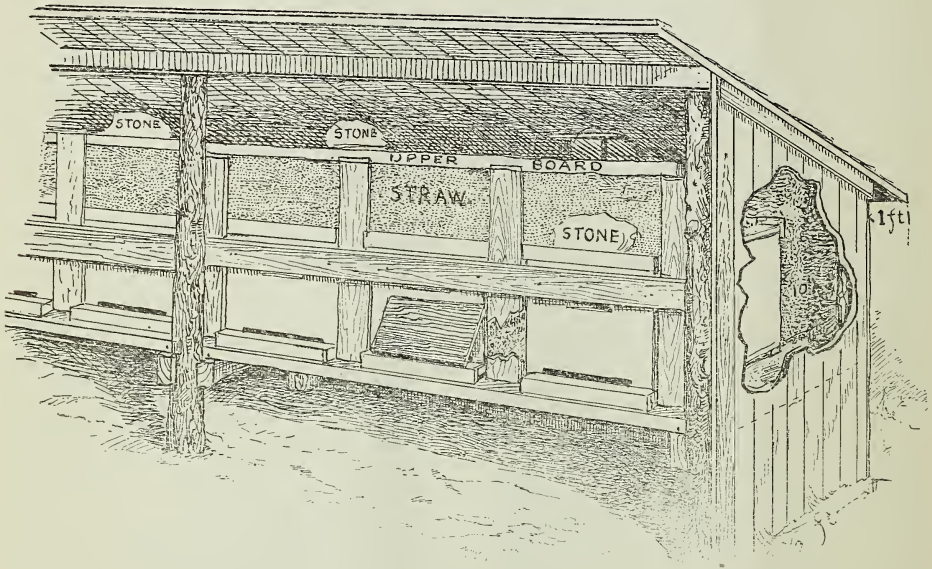
OUTDOOR WINTERING.

Packing Colonies in Straw in a Shed.

BY W. T. DAVISON.

During the winter of 1903 I tried absorbents in supers. I did not lose a colony; but some of the forest leaves used for packing in supers got wet, and I am satisfied they were injurious to the bees; so last winter I took off my supers and placed the excelsior cover directly on the brood body. I did this before it turned cold, as the bees must have warm weather to do a good job of gluing the cover down air-tight, and I also laid a stone on each hive to hold the cover down solid. My hives are in a shed with a floor, and banked up with plank. Hives are about ten inches apart, and ten inches from the back wall.

deep on top of the hives. Then I lay plank on top of the straw to hold it down solid. The straw must be kept dry. If it should get wet and freeze, the bees may not do well. I build the shed facing the south, so the sun will shine on the front of the hives in winter, and sometimes the hot sun shining in at the entrance will cause the bees to think warm weather has come, and they will fly out when the wind is from the north, and so cold that they become chilled and drop to the ground and die. To avoid this just set a board on the ground and lean it up against the front end of the hive. This will shade the entrance at noon, and will also keep a cold south wind from blowing in at the entrance. When the air outdoors gets warm enough for bees to fly, take the board down and let the bees have a good flight. I think that Mr. G. M. Doolittle was



W. T. DAVISON'S METHOD OF PACKING BEES IN STRAW FOR OUTDOOR WINTERING.

To begin fixing for the straw to pack with I take lathing or any thing that is handy, and either nail these strips on the front part of the hive just under the cover, or fix them so they will be held firmly against the front end of the brood body. When the laths are made fast, get boards or plank and set them on end between each hive at the front end, and let them rest against the lathing. These boards should be long enough to reach about a foot above the hive.

Now we are ready for the straw. Get good dry wheat or oats straw. I am very careful to place the straw in between and back of the hives so that it will be perfectly solid. I use straw until the hives are completely covered. The straw must be one foot

the first to write about using a board in front of the hive. The idea is valuable. I have seen my bees lying dead on the snow by the thousands, just for the want of a board like this. Before I used this way of packing my bees for winter I lost bees every winter; but since I have used this method I have not lost a colony. I believe I can winter my bees as well (or better) outdoors packed in this way as I could in the average cellar.

Don't think this is an easy place to winter bees. The weather is so changeable that I am satisfied the same amount of packing that it takes here would do fully as well in the northern part of this State.

I leave this straw on my bees until it is

quite warm in the spring, and if I wish to I take off a little straw at a time. For example I would take it down to the cover some warm day, and then wait quite a while before taking the remainder of the straw out. To take it all out at once might chill the brood. Leave the straw on the hives as long as it will be safe. You can tell by the fanning at the entrance when the bees are too warm; then move part of the straw.

No doubt this way of packing is old to most of you; but there may be a few who haven't heard of this method of wintering bees. Those who haven't any cellar can pack their bees in straw, and they are more apt to winter well outdoors than if they were put in a cellar. If they are packed as I have described, especially if the man owning the bees has not had considerable experience in cellar wintering, one good thing is this: My bees get several good winter-flights. Another is, they begin to raise brood early. Both winters I have had very early brood-rearing; and my colonies are very strong for the white-clover flow.

Velpen, Ind.

ARE SECTIONS DETRIMENTAL TO THE HONEY MARKET?

A Discussion of the Weight of Sections of Honey and the Systems of Selling Them.
Continued from Last Issue.

BY G. C. GREINER.

The next and by far the most vital point which our chunk-honey friends misrepresent is the weight question. Mr. Bohrer says in the article previously referred to, page 814, "It seldom weighs a pound, oftener falling short three or four ounces, yet it sells in most cases at pound prices, not by weight but by the piece." How unreasonable! Did Mr. B. ever weigh and examine a one-pound section (by size) that weighed four ounces less than a pound? I don't think he has, otherwise he would know that no sane bee-keeper would try to palm off such a deficient specimen for a full-sized section at full price. It would be right out and out dishonest; and as honesty is always the best policy the section-producer is not short-sighted enough to cut his own wings by such a proceeding. Even if we had the disposition to do so, and I hope there are not many of this kind in our ranks, it would be next to impossible. In the first place, when retailing them ourselves the consumer would not accept them at full price; and, secondly, they could not be shipped on account of their frailty. A good share of them would be broken from the wood in transit.

A one-pound section of honey that weighs four ounces less than a pound can be one of two kinds. It is either from two-thirds to three-fourths built out, and all finished capped honey, or it is all built out and very little if any capped, and yet may contain quite a little loose honey. The former we sort out and dispose of in various ways. Making

practical application of the principle that the more we use the better the price will be, we reserve a liberal quantity for our own table. We have it on the table every day, and use all we can of it. Then we distribute the same among our friends and acquaintances as occasion may dictate; and what is left then we sell as chunk honey at reduced rates, although I am not favorably impressed with the idea of doing so.

The latter kind, and every thing in the shape of drawn comb with little or no capped honey, is reserved for next season's bait combs, after the honey has been cleaned out by the bees.

Our friends advise us to sell sections by weight. If they had given their well-meant advice a second thought they would have come to the conclusion that this is not only impracticable but impossible. If we should undertake it, it would amount to the same thing as selling by the piece, only in a somewhat reversed fashion. Instead of selling different-weight sections at the same price we should have to sell even-weight sections at different prices, and that would create new difficulties and dissatisfaction.

If the weight of our sections ran at even ounces, or approximately so, their prices could be easily adjusted. For instance, at 16 cts. a pound the prices of sections weighing 15, 16, and 17 ounces would be just that many cents respectively. But what should we do with all the betweens, and the great majority are of this kind? What price should we ask for a section weighing 16½ oz.? We have no smaller fractional currency than cents, so that the half-ounce value could not be affixed in exact change with the currency at our command. The only way would be for the dealer to charge the purchaser 17 cts., making him pay for half an ounce he does not get, or charge 16 cts. and throw in the half-ounce without getting his pay for the same. It would be as unjust for one as for the other to lose the half-ounce, and who should it be? To help us out, custom comes to our assistance and decides the matter.

It is customary, and has been ever since I can remember, that the dealer takes the advantage when the exact change can't be made. If the half-change of 25 cts. is to be made, the dealer retains 13 and gives 12 in return, and nobody finds fault about it. The same principle must be applied to sections and all articles that can not be equaled by even money value.

As I am regularly on the city market I take a stroll occasionally up and down the line of producers and dealers for the purpose of investigating; and I find that nearly all business is transacted by the piece system.

One of my neighbors has a load of cabbage. A partition crosswise the wagon-box separates them into two different grades, one kind averaging a little larger than the other. I ask the price, and he says, "These," pointing to the larger kind, "are three for ten cents, and the others are two for five." Now, his cabbage in either grade are by no means alike. They vary from the

largest to the smallest as much in proportion as our sections, but still the price is the same. The first caller, of course, takes his pick out of the lot; the next one does the same, and every one following is sure to take the best he can find, until the load is sold. Every one of the purchasers had his choice, every one paid the same money, and every one is satisfied.

Another neighbor has among other stuff a couple of crates of cauliflower. Like the cabbage, one crate runs a little larger than the other, and he sells them at 5 cts. apiece, while the smaller ones are sold at 3 cts. each. It is needless to say that they are in either crate no more alike than the other man's cabbage. Every buyer as he comes along follows up the same tactics of taking his choice of the kind he prefers, and no complaint is made. I could cite hundreds of similar instances all along the line if necessary; and why should honey in sections be exempt from this generally adopted practice?

The little conversation between Dr. Miller and the editor on the weight vs. piece subject, pages 1118, 1119, is highly amusing. Each one is trying to get ahead of the other. Dr. M. is generally pretty sound in his writings; but this time, if I understand him aright, his argument reminds me of the drowning man's straw. He says, "Now, what kind of talk is that? Haven't the scales been used in making up those ready-weighted packages?" To be sure, the scales, or some device to that effect, has been used, but not to weigh full weight. I have been connected with one of these manufacturing establishments, and I know just how these things are managed. If the expense of the package is about the same as the value of an equal weight of its contents, that much is deducted from the full weight; in other words, the ready-weighted package, when placed on the scales, balances at its nominal weight. But if the same weight of the contents does not pay for its enclosure, cans, boxes, wrappers, or whatever it may be, the full weight is reduced enough more, or the price of the goods raised sufficiently, to meet this expense.

When we take a view of the endless variety of fancy packages we find stacked up on the shelves of our grocery stores, common sense will teach us that some one has to pay for all this convenience and attractiveness. We know very well that it is not the manufacturer who bears this expense, nor the wholesale dealer, nor the retailer, but it all rests on the shoulders of the consumer, and, strange as it may seem, he is perfectly satisfied with this state of affairs. If you should tell any consumer among the long line, from the aristocracy down to the common day laborer, to bring along his former day's flour-bag and you would sell him 100 lbs. of flour in bulk at 25 per cent less than he has to pay at the store for the same quantity(?) in 10 or 25 lb. paper sacks, he would not even listen to you.

Another instance of fashionable extravagance we have in the line of baked goods.

When we order a pound of crackers, the grocer brings us a square oblong package, elaborately labeled, and done up in fancy style. The few crackers it contains are first wrapped up in a sheet of paraffine paper. This is enclosed by a pasteboard box with a handy adjustable lid, and this again is done up in a nice color-print wrapper. The whole package weighs 13 ounces with a net contents of 10 ounces, and the grocer charges 10 cts. for the package—just one cent an ounce, when crackers in bulk could be had for 8 or 9 cts., or about half the price of the other. I have tried, in a small way, to stem the tide of this unpardonable wastefulness by buying crackers in bulk, but without success. We hear expressions like this: "Yes, they are cheaper, but not nearly so nice. We'd rather have them in packages."

It is useless trying to swim against the stream. Convenience and style, no matter how expensive, are all the go. Then to claim in the face of all this indifference to economy that people will not buy honey in sections because they are a little short in weight, when their chance is equally good to get one of that much overweight the next time they buy, is all imagination.

Naples, N. Y.

To be continued.

BEE-KEEPING IN THE PHILIPPINES.

Bees Twice as Large as Italians; Wax Used as Money.

BY W. H. COONS.

The Christmas number of GLEANINGS has just come, and I have read with much pleasure the article on The Stingless Bee, by Mr. Green. In the last paragraph of the article he alludes to what seems to be the "missing link" in bee culture in regard to an apparently undiscovered species of larger bees than are at present known. He says: "Some hope to find a still larger bee than is now known, and there is no reason why such should not exist."

Now, Mr. Editor, I consider it a great privilege to be able to contribute a few lines to you. I can say that they do exist, and authentically state that this species of large bees is by no means a myth. I can vouch for their reality by the testimony of three of my five senses: I have seen them, and eaten their honey; and the sensory nerves of my skin tell me they are not stingless. I spent nearly two years in their native haunts, and "tracked them to their lair," which is the large forest wilderness that entirely covers the great mountainous island of Mindinao of the Philippine group.

I was engaged in trade with the natives in those islands, whose principal occupation is the collecting of wild honey, and whose currency and stock in trade is the wax produced by these bees. This account may not be of much scientific or practical value, but I presume it will be of interest to those who have looked forward to the day when the

common bee's proboscis could be stretched out long enough to sip the nectar from the red-clover blossoms, which has always excited the cupidity of the apiarist.

This bee is fully twice as large as the Italian, but a little blacker, with distinct light-colored bands around the abdomen. They make a large five-sided cell about $2\frac{1}{2}$ inches deep, filled with a rather thin dark-colored honey gathered almost entirely from the blossoms of the forest trees. They do not seek a hollow tree or other enclosed place to build their nest, but suspend their comb from the under side of the limb of a tree, sometimes not more than twenty feet from the ground, though usually it is high up near the top of the tall trees. But they don't roost too high for the rapacious native. It sometimes takes him two days to scale the dizzy height to their castle, but he gets there just the same by tying rattan bands around the tree, one above another, thereby making a foot and hand hold, up which he climbs with a torch of smoking rattan wood.

Every business has its light and dark sides, so honey-gathering in the Philippines has its bitter as well as its sweet morsel. The man or men who go up the tree get severely stung sometimes; but it is soon forgotten after the spoils have been secured and they are gorging themselves on the honey and young white bees which are still in the comb. They save the wax, and, after softening it in the hot sun, make it into pots of about five to ten pounds. This is bartered and sold and exchanged, and passed through many hands, until it finally reaches the melting-pot of the "Mericano," as much battered and worn as a bad dollar.

There are at least two other varieties of bees in the islands. One is a little smaller than our Italians, and much darker in color, which seem to be the most numerous. There is also another species which is of no value. It is a tiny insect about the size of the little sweat-bee that occasionally lights on one's hand in the summer season. It lives in small colonies of but a few hundred in number, in a hollow tree, high above the ground, and makes a comb similar in shape to the American bumble-bee.

Camden, Ohio, Dec. 21.

PROTECTION FOR COMB-HONEY SUPERS.

Does the Amount of Honey Produced Pay for the Extra Trouble?

BY E. F. ATWATER.

In Dec. 1st GLEANINGS you ask for reports on the value of protection for comb honey supers. I have not had in use any supers double-walled all around, but always, while living in South Dakota, I kept a narrow rim with a chaff cushion on top of the supers on each hive, and was satisfied that the surplus was increased thereby, though in that locality, during our main flow, the nights usually varied from hot to insufferably hot.

After locating here I put in use the same arrangement, but finally discarded it, owing to the necessity of handling the two extra pieces (cushion and rim) to each colony. Without any absolute tests, weighing product of a large number of colonies in the same yard on both plans, I could see very little difference; but nevertheless I think that such tests would prove favorable to more thorough protection; but the only question in my mind is, how great a difference would there be in favor of protection? Mr. Danzenbaker seems to imply that protection on tops and all around will make an increase in the crop of about a half. Please show us the *proofs*, for, if true, I will, of course, adopt such an outer case.

Our new supers are double on the ends (ends of section holders $\frac{1}{2}$ inch thick), while on one side is a follower, and on the other side a Pettit cleated divider *without the holes*, so that, if the force of bees is as strong as it should be, we have double walls on the side of our super also, but *full of bees*, rather than chaff or a dead-air space.

On the side of thorough protection of comb supers stand Vernon Burt, Danzenbaker, Doolittle, Massie, and quite a host of others; but, if I am not mistaken, the vast majority of big practical comb-honey men are on the other side. I want to *know* if M. A. Gill, R. L. Porter, James Heddon, R. L. Taylor, and Dr. Miller have really been losing from 30 to 50 per cent of their crops from a lack of protection for their supers for all these years.

Meridian, Idaho.

POULTRY VS. BEES.

A Case in Point of How Bees and Poultry can be Made to Pay.

BY H. B. STRATTON.

After a careful study of Mr. McGlade's article on page 1307 I fail to find "ocular proof" that there is no profit in poultry; and if Dr. Miller looks at poultry-raising in the same light he will also fail to find it. Mr. McGlade seems to place all the blame on the Plymouth Rocks. I place it on the man. Apparently he did not know *what* to feed nor *when* to feed it.

As Dr. Miller would like to "see the figures," but failed to find any given by Mr. McGlade relative to poultry, I should like to give our experience for the doctor's benefit and of other readers of GLEANINGS.

During the year 1905 we kept 140 hens — a mixed lot of Leghorn, Plymouth Rock, and Hamburg fowls. Here are the figures: We set 38 hens on 495 eggs, hatching 390 chickens, and 275 of these were raised.

NUMBER OF EGGS LAID.

January, 1524;	July, 1500;
February, 1665;	August, 1180;
March, 2594;	September, 1163;
April, 2755;	October, 805;
May, 1962;	November, 282;
June, 1783.	December, 360.

Whole number of eggs laid, 1464 dozen; whole number of eggs sold, 1262 dozen, or \$335.55; fowls and chickens sold, \$76.31. Total amount taken in, \$411.86. Feed, etc., bought 14,614 lbs., costing \$188.16, leaving a net profit of \$223.70.

The above figures represent actual money taken in and paid out. No record has been kept of the grain that has been raised on the farm and fed to the hens, or of the chickens and eggs used by the family. The value of one is nearly balanced by the other.

Mr. McGlade's advice is to try bees alone. My advice is to try both poultry and bees in a small way, at first, if you live near a good market for eggs and honey; then if you can succeed at both you have a double income; but if you have the luck of Mr. McGlade you can drop one and still have the other to fall back upon.

My bees produced an average of 70 lbs. per colony last year, mostly from buckwheat and goldenrod. I use the plain sections and fence separators, and sell by the piece as J. E. Crane recommends. I have not been able to secure enough honey to supply the demand.

The Hoffman frame is here to stay. I have used it since keeping bees, and do not care to change.

South Fallsburg, N. Y., Jan. 8.

THE VALUE OF BEE BOOKS AND JOURNALS.

How to Read an Article.

BY J. G. BAUMGAERTNER.

Several of the bee journals have lately touched upon the question, "How many bee journals should a bee-keeper read?"

The same question should be asked regarding bee-books, for they are of no less importance than the journals. These questions are by no means insignificant, for bee literature is to-day playing such an important part in modern apiculture that it is something indispensable to any one who would keep abreast with the bee-keeping world, and take advantage of the best inventions and discoveries along apicultural lines. What has done more toward building up American bee-keeping to what it is to-day than the agency of bee literature? Without it the majority of us would still be plodding along as did our ancestors of the skep and box-hive age. With the information given by experienced men through the pages of bee journals and bee books the beginner can to-day set in where the veteran left off, without having to go over the same old ground once more. Thus progress is made. New ideas are now spread broadcast over the land in a few weeks, whereas without our journals they scarcely ever reach beyond the immediate neighborhood of the originator.

But, bearing in mind that bee books and papers are a necessity — yes, a blessing — to

our industry, the question confronts every bee-keeper, how many of the numerous books and papers on bees shall he read?

This question has been answered, at least regarding bee journals (and the same, undoubtedly, applies to books) several times, that a man should take at least two or three, as usually each journal has a distinctive feature of its own (and so have the books), and consequently an importance of its own. I consider this good advice; but I will add, however, do not take any more than you can do justice to. It is not so much the quantity as the quality of what we read that is of real value to us. Again, if we read too much we are unable to digest what we read, and are apt to be as much, if not more, harmed than benefited. How many journals and books a bee-keeper can read and derive the greatest benefit from his reading is, I think, a matter greatly depending on the mental abilities and the spare time of the individual.

I find that, in order to make my journals most profitable to me, I must not only read them but *study* them. Where new plans and ideas are set forth it pays to get down and study matters with closest attention to every detail of methods described. A lead-pencil and some paper are frequently found useful to note down this or that as I read along, or even outline certain methods while I read the description. It makes things plainer, and helps to impress details upon the mind; for it is of no small importance to be positive about the minutest detail of the description read, when out among the hives testing a new plan.

I am frank enough to say that I am of the opinion that, in regard to thoroughness, many, even more experienced bee-keepers are "found wanting." For instance, I have noticed many times when new ideas were advanced regarding some feature of apiculture that almost invariably some have reported that they failed in carrying it out successfully; and not seldom it finally appeared that some little but essential parts had been overlooked, or either a change had been made willfully. Here let me call attention to what Mr. E. W. Alexander says on page 1189: "Now a few words to all who try new methods which the writers for our bee journals recommend. Either carry out those methods to the letter or let them alone; don't mix up a lot of your own ideas with those of others, and then condemn the writer for not giving a practical method."

A short time ago I met an old bee-keeper. Our conversation turned upon bee books. He told me that beginners often consulted him as to what book they should get, and that his answer usually was, "Do not get any book. If you want to find out anything about the management of bees, come here and spend half a day with me and see how bees are handled; for it is a known fact that farmers working according to books never raise any corn."

Now, while I esteem this gentleman very highly, and respect his advice as coming

from an experienced apiculturist; and while I most firmly agree with him that practical experience is worth more than theoretical knowledge, my own experience with books and journals leads me to disagree with him most decidedly when he advises beginners to let bee books alone.

Regarding the reason this man gave for the inadvisability of studying bee books, I will say it was of benefit to me, as it set me to thinking over the questions, why do farmers working according to book-instruction frequently fail? And why do bee-keepers often fail to be successful in carrying new methods advanced in bee-journals? Is it not because they are personally not adapted to the pursuit in the first place, and would better do something else, and, secondly, go about their work thoughtlessly and carelessly, leaving the trouble of thinking to other people. As in bee-keeping, so also in farming, locality and weather conditions are two important factors that need careful consideration.

Again, methods employed in the South will not apply in the North invariably, and *vice versa*. The soil in one locality will need a slightly different treatment from that in another locality, to yield the best results.

These and many other conditions, the farmer who follows written information must bear in mind. The same holds good with the bee-keeper. A Texas apiary must be managed differently from a Michigan one. In one locality the flow comes early, in another it comes late, etc.; consequently it requires careful thinking, comparing, and observing, besides reading good and instructive literature.

New Memphis, Ill., Dec. 29.

SOME COMMENTS AS TO HOW FAR MR. ALEXANDER'S METHODS ARE APPLICABLE TO OTHER LOCALITIES.

A Few Timely Suggestions to Beginners.

BY J. L. BYER.

Much as I have been impressed with the magnitude and success that Mr. Alexander has attained in the matter of keeping a large number of colonies in one place, I can not help thinking that a whole lot of his teachings through the columns of GLEANINGS are not adaptable to localities of the majority of bee-keepers. For instance, in how many localities would it be advisable to attempt to treble the number of colonies previous to the honey-flow? Certainly not in any place where clover is the main source of surplus. Perhaps Mr. Alexander classes all such locations as not being "fairly good," yet it is not uncommon for us to average 100 lbs. or more to the colony. But you may rest assured that nothing like that could be obtained if we broke up all colonies previous to the flow. On the contrary, every effort is made to keep all colonies intact, as in more than one instance this 100 lbs.

surplus was all gathered during the month of June. In Nov. 1st GLEANINGS, 1904, Mr. A. tells us that he seldom gets any honey previous to August; and that in nineteen years, in only four years have they received any surplus previous to that date. Easy to see that what would be practical in a locality like that, as regarding the matter of increase, would be ruinous to the crop of honey if attempted by a bee-keeper in the clover belt. I believe that the majority of bee-keepers so situated will agree with me that the slogan should rather be, "Keep all colonies together without division as long as possible."

Another item I should like to mention is to the writer, at least, a "stunner." I refer to Jan. 1st GLEANINGS, where Mr. Alexander speaks of the matter of winter stores for the bees. He says, "In order to avoid light colonies in the fall, let your bees fill up their hives with the first honey of the season, and see that they have plenty of it capped over before you put on your extracting-supers."

Why, Mr. Editor, don't you think that, granting such practice proves all right with Mr. A., yet it would spell "d-i-s-a-s-t-e-r" for most bee-keepers in most localities? Are we to drop all efforts at having the brood-nests filled with *brood*, and substitute honey in lieu thereof? But how does Mr. Alexander accomplish this? With us, while waiting for the brood-chamber to get plugged with honey, the bees would swarm or loaf; and if, perchance, some did not swarm, I wouldn't give much for a queen that would tolerate a lot of honey in a Langstroth hive with extracting-supers on during a good flow from clover.

Another strange thing is that, in a *buckwheat* locality, such precautions should be necessary. At one of my yards we occasionally have a little buckwheat surplus. When this happens the Carniolans and blacks are generally, and the Italians *always*, heavy enough for winter at the close of the flow. With all due respect for Mr. Alexander's opinions, I think it would be a great big mistake for bee-keepers in clover locations to follow his advice in this matter.

In an article written by Mr. A. some time ago he cautioned bee-keepers not to let the bees get ahead of them in the extracting season. In his own practice he extracted the honey when the bees were just ready to seal over the combs, claiming that, if left to be sealed over, much less honey would be gathered. Again, granting that Mr. Alexander can work this plan all right, do you think the advice sound in view of the needed campaign toward getting bee-keepers to produce a better quality of extracted honey? But by using two or more supers, I very much doubt if Mr. A.'s contention will prove true relative to securing much more honey by extracting before the combs are sealed. But, to return to the question:

In a footnote to Mr. Alexander's article in Jan. 1st GLEANINGS, in speaking of his

storage-tanks you say the honey "is very thick when it comes out of the combs." In view of Mr. Alexander's avowed statement that the most of his honey is extracted before the combs are sealed, the wonder to the writer is, how can his honey be *thick* when it is extracted? Clearly a question of locality again, as here with us buckwheat honey is *always thin* if extracted before the combs are sealed. Indeed, it is never as thick as clover or basswood honey, even if left on the hives till sealed.

Lest my motives in this writing be misconstrued, let me say that Mr. Alexander is in the eyes of the bee-keeping world at present, as Dec. 15th GLEANINGS aptly puts it, "Alexander the Great," and any thing coming from his pen is sure to be acted upon by thousands of bee-keepers (especially amateurs) another year. While his methods are, no doubt, sound for his own locality, which, by the way, is one in a thousand, yet, as before stated, for the great majority of localities I feel confident some of these same methods are not practical. In view of this, Mr. Editor, is it not wisdom to caution beginners about leaving the "beaten paths" too far, and following what may, in their localities, turn out after all to be a phantom?

Markham, Ont., Can.

[Notwithstanding I have stated that Mr. Alexander's locality is a peculiar one; that I did not believe the average locality would support anywhere near 750 colonies, and that I did not think the average bee-keeper would do well to extract before the bees capped their combs, and notwithstanding that Mr. Alexander has also himself put emphasis upon some of these things; yet I believe that many of our readers, especially those who have conditions considerably different, would do well to consider thoroughly all that Mr. Byer has to offer. In defense of Mr. Alexander I may add, however, that if Mr. Byer or any one else could see the situation as it exists in Delanson and vicinity, he would see how well Mr. Alexander *knows* his locality and how well he makes use of that knowledge.

As to the thickness of Mr. Alexander's honey, I repeat that what I saw in the tanks was of good body and quality. Some of the points suggested by Mr. Byer are covered by Mr. Alexander in this issue.—ED.]

BANAT BEES.

A Description of a New Race.

BY L. A. LAWMASER.

I have tried most races of bees, including the Banats for three years. I consider them the best and gentlest bees in America today. I have the Caucasians and Banats, and I find the Banats the gentlest, while the Caucasians run around over the comb and crawl over my hand; but the Banats keep quiet on their combs, and do not run around over the combs. I have handled them with-

out smoke when gathering honey, and have taken off the surplus section without a bit of smoke, and have opened up the hive quite often and taken all the frames out and put them back without the use of any smoke. They are about the same color as the Carniolans, only a little lighter gray color. The drones are about the same as the Carniolans, only whiter on the body, and have more hair on the last segment. The queens are smaller and darker than the Carniolans, but just as prolific. They do not swarm as much as the Carniolans. I have kept them three years and haven't had a swarm yet. They have gathered a third more surplus honey than the best Carniolan bees have.

I will say in conclusion that they suit me the best of any bees I ever tried. They are hardy and industrious.

Upper Sandusky, O.

HANDLING BEES AT COUNTY FAIRS.

No Cage Necessary.

BY I. HOPKINS.

I was highly amused on reading your editorial under the above heading in your issue for September 15, especially that part describing the elaborate preparations made for the demonstration, where you selected a colony of gentle bees, and got rid of the "flying bees" before putting it in a cage. I presume the reason for this preparation, and confining the bees and the man in a cage 6 × 5½ × 4 ft., was to prevent the onlookers getting stung. Now, I may tell you that it is nearly 25 years since I first commenced to give such demonstrations publicly, and for the last 12 years I have done it annually at agricultural shows; and all the protection the public had or needed was a few hurdles to make a ring so everybody could see.

My demonstration has been the transferring of bees and combs from boxes to frame hives without smoke, veil, or other protection—generally from three to four boxes. Sometimes blacks, sometimes hybrids, just as they came along. The ring was formed of sheep-hurdles, about 60 ft. square. That was all. The man who knows his work can get the bees under control at once without smoke, and I have never known an onlooker to get stung.

I. HOPKINS.

Auckland, New Zealand.

[See editorial and article of the editor elsewhere in this issue. I am willing to subscribe to your statement, after a further trial of the plan of exhibiting bees at county fairs, that no special precaution need be taken to secure extra-gentle bees; but I would hardly advise handling them in the open, for the reason that horses driven near by might, with their switching tails, get stung; and this would cause a catastrophe in a crowd that would be serious, and it would bring down on the head of the bee-keeper the wrath of every one. At our county fair I scooped up some handfuls of bees, stepped out of the cage, and walked

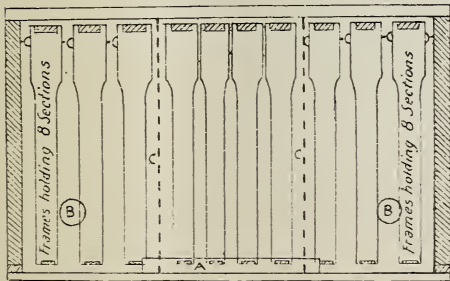
around in the crowd. I noticed that some bees took wing. While there was no disposition on their part to offer attack, yet some people in the crowd would strike at them, and, much to my consternation, a big powerful bay horse, full of life, went past us. One or two stray bees buzzed about his head. He began switching his tail vigorously, and shaking his head. I lost no time in getting back into the cage, and I was fearful every moment that the horse might with his tail get the bees to sting.

There is another advantage in a cage; and that is, that bees *confined* are more gentle than those that have the perfect freedom of the air. They seem to be demoralized by their constant handling; and when they try to take flight they discover they are prisoners. Then their entire thought is how to get out. As I have elsewhere acknowledged, the idea of handling bees in a cage at outdoor public gatherings came from England.—Ed.]

BROOD-FRAMES AND COMB-HONEY SECTIONS IN THE SAME BODY.

BY C. M. CHURCH.

I enclose a sketch of a hive for raising comb honey. I am only a beginner in bee culture; and as I experienced a great deal of trouble in getting my bees into the super I concluded to change the construction of the hive so as to let them fill sections by placing sections in the body of the hive. While this scheme was new to me I have since found that it is an old idea, invented by Mr. Langstroth in 1852, and used in a little different way. I am also informed that more honey can be obtained per colony in this way, but at a greater expense in labor.



My idea was to build a large 12 or 16 frame hive deep enough to take in two 4x5 sections standing up, and four sidewise, making 8 sections to the frame (see sketch of frame). Then put in as many frames as desired for the brood-nest; say four to six, with a queen-excluder each side of the brood-nest; then fill up the rest, each side of the brood-nest, outside the queen-excluder, with frames containing 4x5 plain sections, with fences between them (I mention 4x5 plain sections because they sell best in this locality). I would also have three separate openings to the hive—one to the brood-nest and one to

each set of five frames, then the bees would not have to pass through the queen-excluders at all.

I expect to be able to breed up in the spring in this hive, to get the best results, and also overcome the desire to swarm to a great extent, by giving the queen plenty of room to do her best and not be crowded.

Arnold, Pa., Jan. 17.

[The plan you describe was used many years ago, but discarded. There are two objections to it. First, it makes an awkward odd-sized hive; second, comb honey stored next to brood-frames will be discolored by reason of the bees using wax from the brood-combs in building combs in sections. No, I do not think more honey can be produced by this plan—at least there are no data to show it. There is another incidental disadvantage; and that is, the outside frame, containing eight sections, would present a large surface to the side of the hive, and this would result in the surface of those combs being neglected or poorly filled. The same objection applies to the ordinary comb-honey super containing one tier of sections; but in this case only half the surface is presented to the wood; and even this objection is largely overcome by the use of slotted dividers, or fences, put next to the outside of the hive.

If you would consult bee-keepers of large experience you would probably save a good deal of money, and in the end abandon all idea of a hive like the one shown in the diagram above. The whole field has been thrashed over and over by others, only to be abandoned; and as history is pretty apt to repeat itself, you will be almost sure to be a loser by the operation.—Ed.]

THE OIL-STOVE METHOD OF WARMING STORAGE TANKS; A CORRECTION.

BY A. J. BURNS.

Mr. Root:—When I sent you a description of my tank for heating a large body of honey I mentioned an oil-stove only as a means of heating, without giving any description of it. The cut on page 26 would indicate a *very much less* capacity than the stove I use, and I don't wonder you raised the question of capacity. The water is used over and over; and after it is heated it does not require so much heat to keep it going.

In my stove the oil flows into a shallow circular trench (fast or slow as may be desired), about five inches in diameter. In this trench stands a narrow asbestos wick, nearly four inches in diameter, to take up the oil. The opening on the top where any thing would stand to heat is nine inches in diameter. The flame can be made to blaze up very fiercely, and spread the full width of the opening on the top. Two of these burners, side by side, can be made to produce quite a heat. The top of the stove, in size and appearance, is just like any self-generating gasoline-stove on the market to-

day, and of equal capacity. I built the tank in the shape it is to fit the place I wanted it to stand in, and to economize room.

My stove is located further toward where the hot water enters the tank than is indicated in the cut, making less distance to flow before the heat is applied to the honey. The tank stands back close to the wall, so every thing had to be in front—honey-gate and all, so I raised the pipe to the level of A, Fig. 3, where it enters the tank, and thence down the three-cornered flue and well across to the opposite side before discharging the hot water.

A union at C, Fig. 1, and A, Fig. 3, enables me to remove the whole thing and use the tank as I would any ordinary tank if I wish. I use the stove about the honey-house or bee-yard for heating water or syrup, or for any other purpose for which an oil-stove can be used.

Lusardi, Cal., Jan. 10, 1906.

STORING AND PREPARING HONEY FOR MARKET.

The Cheapest and Best Form to Have it.

BY G. BOHRER.

On carefully looking over my article and Mr. A. I. Root's criticism (page 813), I find that, aside from a little of my sarcasm about section honey, he has misapprehended what I was aiming at, which was, to set people to thinking about the cheapest and best form in which to have honey stored and prepared for market and for food. I know Mr. Root will not assume that honey can be produced in sections as cheaply as it can be produced in the extracted form; and, moreover, he will not, with his large amount of knowledge upon nearly all questions, hesitate to admit that beeswax is wholly indigestible, and that all we can say for it in the honey-comb is that it *looks* well when well filled with honey, but is of no value as food; and in many cases of stomach ailment it is a positive irritant. He does not question the correctness of my position as to the artificial-honey-comb falsehood having as one of its chief support the honey section. While extracted honey is often given the cold shoulder on account of being under the suspicion of being largely adulterated with glucose, in this particular both the section and extracted honey are very nearly on an equal footing. I have no idea of the people ever going back to the old glass-sided box for surplus honey, for it is no cheaper a method of producing honey, and has but one claim over the section—namely, in the box it was almost invariably sold by the pound or by actual weight, while the section is very largely sold by the piece, and is called a pound, but is not. This the people do not like, and in many cases do not buy honey on account of the cheat in paying pound prices for a part of a pound. Any measure that can be adopted to get honey into the hands of the consumer by actual weight instead of

an almost universal shortage under the name and price of full weight, will give the sale of honey a forward move.

Lyons, Kan.

NOTES ON VARIOUS TOPICS.

Improving Comb Honey by Exposing it to Dry Hot Air.

BY GRANT STANLEY.

The editor invites the readers of this journal to a general discussion on the subject of exposing sections of honey to dry hot air after removing from the hives, page 1174. Now, if we would learn a lesson from the bees in this matter it would seem clear that we should by all means so arrange all section honey that a volume of dry hot air can constantly pass around them. We have been reading much about quality, and it is just this feature that secures it. Just how high a quality can be obtained I am unable to say; but it is the duty of all bee-keepers to place all the quality possible in their product. I believe the majority of bee-keepers will agree that, by exposing the sealed sections after removing them from the hives to a continuous supply of dry hot air, will greatly improve the quality, and consequently enhance the value of the product. Yes, Mr. Editor, if you want to improve the quality let the dry hot air pour over the sections, and, if necessary in order to keep out robbers, better place a self-closing apparatus on the door of the honey-house, which would insure its always being closed.

PACKING COLONIES FOR WINTER EASIER THAN CARRYING THEM INTO A CELLAR.

Don't you think that, as far north as 42, the difference in consumption of stores between cellar-wintered colonies and those wintered on summer stands would scarcely pay for the trouble of carrying them in and out of the cellar? The labor necessary to do this will prepare them for winter on summer stands, while those cellar-wintered must be furnished protection when brought out in spring. Another thing, in case the bees have unknowingly gathered an inferior quality of stores for winter from the late bloom, and an occasional day sufficiently warm for bees to fly, they have an opportunity for flight, while cellar-wintered colonies must remain inside, and quite likely become uneasy, owing to a rising temperature. I believe it is the practice of many bee-keepers wintering bees in cellars to allow a percentage of colonies to winter on summer stands; they also want little brood reared before the colonies are brought out of the cellar. I am of the opinion that, if bees are prepared for winter with plenty of good porous material (the more packing the better), the extra amount of stores consumed in wintering will more than balance in a lot of healthy young bees, and I have never failed to have the hives full in spring just when they were needed, page 1174.

Nisbet, Pa.

HOW TO ADVERTISE AND SELL HONEY AT COUNTY FAIRS AND OTHER PUBLIC GATHERINGS.

Live-bee Demonstrations Inside of a Wire-cloth Cage.

BY E. R. ROOT.

In our issues for Sept. 15 and Oct. 15 I told something of our experience in selling honey and making live-bee demonstrations at the Medina Co. fair, and at the one in Akron, a city of about 60,000 inhabitants some twenty miles east of here. You will remember how at the Medina grounds, by

the crowds would pass by; and, presto! the sales jumped up more than double. Big crowds would surge around the cage in which was the apiarist, with bare hands, bare arms, and bare head, handling bees, scooping them up by the handfuls. When we once got the attention of the people it was easy to direct their attention to the glass observatory hives at our honey exhibit, where they could see the bees at close range. Once at the honey-stand it was not difficult to make sales of honey.

At the Akron fair we sold in three or four days nearly \$350 of honey in a territory where we had never sold honey before, and during these days we were constantly refut-



FIG. 1. --THE CAGE USED BY THE ROOT CO. FOR SHOWING THE HANDLING OF BEES AT COUNTY FAIRS AND ELSEWHERE.

reason of the live-bee demonstrations, we more than doubled the sales of any previous year without such demonstrations. The experiments proved to be so successful in the way of drawing a crowd that it was repeated at Akron. The first day or two our boys were compelled to put the cage with the live bees in the rear of the honey-sales stand, where very few people passed. In consequence of this, very few people saw the exhibit, and the sales were light. You may remember how we labored with an over-officious official until we succeeded in getting the cage out in front, and exhibiting where

ing the comb-honey lie as well as whetting the appetites of the people for good honey. Thousands and thousands of people saw the exhibit, and hundreds went away with a package of honey. The local grocers in Akron were compelled to put in a line of our honey because of the demand we had created. I have promised to give photos of the demonstrations given here and at Akron, and take pleasure in presenting them here.

Fig. 1 represents the cage elevated on a large table, just as it appeared on the day following the fair at Medina. It is 5½ feet high, 6 feet long, and 4 wide. These dimen-



FIG. 2.—THE WAY THE PEOPLE CROWDED AROUND THE DEMONSTRATING-CAGE AT THE MEDINA COUNTY FAIR.



FIG. 3.—THE ROOT CO.'S HONEY-SELLING WAGON AT THE MEDINA COUNTY FAIR.

sions were used in order to have the wire cloth cut to advantage. The cage was made collapsible by making each side and each end in the form of a big picture-frame with wire cloth tacked on. The top was a similar frame except that it was covered with plain white muslin to afford a shade. The several panels of the "picture-frames," if we may use the expression, were carried to the fair-ground in the flat. The table or platform was then prepared, when the four panels and the top were set in place, and secured by means of ordinary wood screws. Your humble servant stands by the side of the cage looking at the colony of bees which has been on exhibition during the two days of the fair preceding, while my son snaps the shutter of the camera.

I would call your attention to a little door on the side next to me, through which the apiarist can pass in and out. Loose straw was strewn on the floor of the cage to avoid crushing the bees when they dropped down.

Fig. 2 shows the same during one of the days of the fair, and represents the usual crowd that hovered around to see the wonderful stunts of handling live bees inside of a cage. There was generally a fair bunch of people present whenever the apiarist was inside.

Fig. 3 shows how we rigged up a light spring wagon, with a top and shelving for the sale of honey. For small fairs this does very well.

The three other views show the crowds

that hovered around our exhibit and bee-cage at the Akron fair.

Fig. 4 shows the stand at the moment when the crowds had stepped away just enough to allow the camera to get a general view of the exhibit as a whole.

Fig. 5 is the same exhibit just after the crowd was passing by before we could get the cage in front. But it by no means shows as large crowds after the cage was set out in front. Here the jam was so great that we often blocked the roadway.

Fig. 6 shows the same exhibit from the rear, with the demonstrating-cage as it was before it was moved forward; but, as previously explained, it was difficult to get the crowds back so the cage might be seen.

I am satisfied that this method of advertising and selling honey is one of the very best that has ever been proposed. While it is comparatively new in this country, it is one that has been used to a considerable extent in Europe; and I expect, during the late summer and early fall, to urge every subscriber, so far as possible, to make such a demonstration at his nearest county fair. I wish they would try it at least once. If they are then not able to sell a large part of their crop without sending it to a big city I shall be surprised. The operator in the cage should be the honey-producer himself. He should be prepared to tell the truth about honey, all about the queen, the bees, and the drones; something about bee diseases and the habits of the bees in gen-



FIG. 4.—THE ROOT CO.'S HONEY-SELLING STAND DURING A LULL IN TRADE.

eral. A little good talking and live-bee demonstration work will do a lot of permanent advert sing.

LIVE-BEE WORK IN A CHURCH OR PUBLIC HALL.

I have had an idea for some time that this same plan could be used in a lecture hall or church at night. At the request of the young people of our own church I tried the experiment by taking the cage shown in Fig. 1 and mounting it on the pulpit platform. The audience was first treated to the natural history of the bee, general facts about the honey business, and then was presented with a series of stereopticon slides followed by a moving-picture exhibition showing many of the familiar operations in a beeyard as they actually occur in every-day practice.

The evening's entertainment was then closed with an actual live-bee demonstration inside of the cage. A colony of bees right from their winter quarters outdoors had been put inside of the cage some hours before the evening's entertainment, to allow the cluster to warm up and expand over the combs. I felt some misgivings as to the success of the experiment, but nevertheless decided to take my chances, come what might. I took off my coat and vest, rolled up my sleeves, so the bees would not get up the sleeves, stepped into the cage, lighted my smoker, and opened up the hive just as I would do in the summer. Just how the

bees that had just come from a long sleep would behave, whether or not they would spot up every thing with their liquid fæces, was largely a matter of conjecture. However, I pulled out the combs, patted the bees on their backs, and, contrary to what you might expect, they were not affected by the artificial lights. Indeed, they behaved in every respect like bees that had been having flights every day in summer. There was no spot of any kind, and I had no difficulty whatever in shaking the bees into a big dishpan, and scooping them up by the handfuls before the audience. I then told them that any one could do that the same as I; and in proof of the assertion I asked a young man who had never had any experience with bees to step into the cage, with bare hands and arms, and *do exactly* as I told him. I cautioned him, of course, about making any quick motions, and explained how he must run his hand down gently under the mass of bees in the dishpan, which bees I had shaken up into a heap. He secured a good handful and held them up before the audience. I had previously picked out a man of good nerve who, I felt sure, would do as I told him, and he did. This stunt pleased the audience perhaps more than any work that I did. Then I told him how to disengage the bees from his hand by one quick shake. He stepped out, without having received a single sting, then I invited into the cage one of our regular apiarists, and we together



FIG. 5.—THE WAY THE PEOPLE CROWDED AROUND THE ROOT CO.'S HONEY-SELLING STAND AT THE AKRON FAIR.

did some more acts. But my companion did one thing before I could stop him, and which was not according to my program. He scooped up two handfuls of bees, then jarred them over the top of his head. He was literally covered. I was fearful of the consequences, as I thought he would be stung, and told him so, but he decided to take his medicine. He *was* stung, and so was I; but the audience did not know any thing about it. For a few minutes we were busy scooping the bees off from each other, once in a while drawing a sting.

For inside demonstration work I would not advise shaking the bees into the hair; for if there is any thing that will invite stings it is wool or hair. However, we were not badly stung, and up to the time of this shaking of bees over the head not a sting had been received.

MAKING LIVE-BEE DEMONSTRATIONS IN A SHOW-WINDOW.

I have not tried it yet, but I expect to make a demonstration of this kind in one of the large show-windows in one of the principal stores in Cleveland. I shall have honey in its various forms; will take my place in the show-window inside of the cage, then go through with the principal operations of a bee-yard; then get my crowds to understand the value of honey as a food, and allow each one to sample, leaving the store people to make the sales. I am certain the plan will work.

I respectfully suggest that bee-keepers

try the experiment at their own local groceries. Take a hive of bees out of their winter quarters, preferably from outdoors; make your demonstrations; and if you do not make some good sales and do some permanent advertising I shall miss my guess.

A STONE BEE-CELLAR.

The Advantage of Having Two Rooms.

BY HARRY LATHROP.

We have built a new bee-cellar at the Bridgeport yard, and, of course, would like to talk with the bee-keepers about it, and have their opinions as to its probable wintering qualities.

I have said it is the best bee-cellar I ever saw; but then — perhaps I never saw many. However, I can say that, in my travels among bee-keepers, I never missed an opportunity to examine the wintering facilities of each, and through correspondence have investigated others as well as I could. As a result, some things have become clear to me — among them, the fact that artificial heat in or near the cellar has proved a help to perfect wintering. We have learned that it will not do to put the bees into a cold damp stuffy place where a human being would recoil at spending a single night. Bees want a comfortable place where the air is good, although they do not require to have the temperature as high as one of us would



FIG. 6.—CROWDS AROUND THE ROOT CO.'S DEMONSTRATING-CAGE AT THE AKRON FAIR.

want it. That is because the cluster has better means of preserving heat than has a single human body.

Fire in stoves or furnaces in rooms adjoining the bee-cellar seems in many instances to have had a good effect. Mr. Wm. Prisk, of Mineral Point, Wis., reports very successful wintering. His cellar is one of four rooms under his dwelling. It is the northeast room, and entirely under ground. One of the outer rooms is used as a shop, and has a stove in it to supply heat in winter. He winters without loss, and there are very few dead bees on the cellar floor at the close of winter. I do not think such results would have been possible without artificial heat in the adjoining room, which purified and dried the air. A man at Bloomington, Wis., not far from here, wintered 20 colonies perfectly last winter, shut in the hives with screen. They were placed in the cellar under his dwelling, in which there was a furnace for heating the upper rooms. I would not shut bees in the hives that way, but he reported very few dead bees in the hives.

In 1904 when our apiary here consisted of only 75 colonies I helped carry them down a steep hill and place them in the cellar un-

der the house. It was very hard work, and I promised myself it should never be repeated, but that a new cellar should be built before another winter, and built right in the yard among the hives. This was done, for we had to move several hives in order to dig the pit. I had the cellar all planned in my mind before a blow was struck; then the digging was done during the season when some one had to be in the apiary, so the expense of that part was small.

The room was designed to hold 100 to 150 colonies in eight-frame hives. It is located in the hillside, and we took out of the pit enough good limestone to build the walls, and had some left for wings to support the bank.

While we were digging there were some very heavy rains, but not a drop of water would stand in the pit — showing that the drainage through the limestone bottom is good, and, of course, there is no necessity of putting in any special drains.

If the bottom had been clay instead of limestone I think I should have made drains leading out from underneath the floor. In these I would have placed porous tile surrounded with broken stone.

The main room is 9×16 feet inside, and 7



HARRY LATHROP'S STONE BEE-CELLAR IN THE SIDE-HILL.

feet high in the clear, besides the space between the joists.

To protect the entrance there is an outer room 4×6 ft. Double doors open from the outside into the small room, and there is a single door between the two rooms. This outer room is built with thick walls well plastered, and is partly banked in. The main cellar is entirely in the ground, and the top is arranged to take one or two feet of dry packing. I expect to use forest leaves, but would use planer chips if they were handy. I think, though, that forest leaves make as good packing as any thing. Over all there is a good shingle roof with a box or wooden tube ventilator through the ceiling, reaching down to within two feet of the floor. All the joints of the upper part are laid in cement, and the place will be absolutely mouse-proof, as all bee-cellars should be.

The inner door that separates the two rooms has a small ventilator at the bottom and another at the top; an opening 3 by 12 inches.

My theory is that, by heating the outer room with a small stove, the hot air will be forced into the cellar at the top opening, and the cold heavy air drawn from the bottom, thus changing the air in the cellar, warming and drying it. There can be an intake for cold air to the outside from the small room if it is found necessary. I do not expect to use this heating arrangement if every thing goes well without it, but I would not build

a bee-cellar without having this provision for an occasional fire during the long cold spells of mid-winter.

This cellar cost about \$75.00; but such a repository, if it works right, will often pay for itself in a single winter. I now have 105 colonies to winter, with a good prospect for a white-clover year ahead, so it pays to have things about right. You will observe that I can go to this cellar at any time during the winter, and enter so quietly as not to disturb the bees in the least. The situation of the cellar is favorable; but if I were compelled to build where the ground is damp and flat I think I would build on top of the ground, either on the plan of that of Mr. Boardman, of Ohio (which I have examined and like), or by making thick dirt walls for protection.

My cellar, as described, is only a simple affair; but it has some good points, among which are the following: Natural stone floor with perfect drainage, heavy stone walls, mouse-proof joints throughout; warm substantial covering, entrance protected by an outer room in which there is an arrangement for artificial heat, if necessary, without disturbing the main cellar; entryway on a level with cellar floor.

Bridgeport, Wis., Oct. 23.

[In a later letter Mr. Lathrop reported that the bees in the cellar at that time (January) were very quiet, and seemed to be in first-class condition.—ED.]



BEES LIVING ON COMBS BUILT IN THE OPEN AIR.

BEES LIVING ON COMBS BUILT IN THE OPEN AIR.

BY DELE COLLINS.

A man living near here told me about some bees that had a nest in the open air, and I accordingly went out to see him. With a kindness characteristic of woodsmen he went with us to see the bee-tree. We drove half a mile through an old log road in the woods, when he suddenly pointed almost straight above his head and said, "There they are." And, sure enough, they were there, fully fifty feet above us, and out near the end of a long limb of a great hickory-tree. They had been there more than two months. I got out of the carriage, took off my coat and vest, and lighted my smoker.

After climbing up to the bees I whitened at the limb until it swung down beside the trunk of the tree. Then I trimmed out the small branches beyond where the bees were, cut off the limb close to the bees on the trunk side, and took it down. We got home all right, without one sting from the beginning of our operations to the end.

I sawed the limb the length of a brood-frame, notched the ends, and placed my bees in a Langstroth hive, where, with five well-filled frames from other colonies, I am hoping that they will stand the winter. There are four combs fastened to the limb, two

large ones in the center, and one small one on each side. Three show in the picture.

Danville, Pa., Nov. 6.

A BLIND BEE-KEEPER.

A Man who Hives Swarms Without the Use of His Eyes.

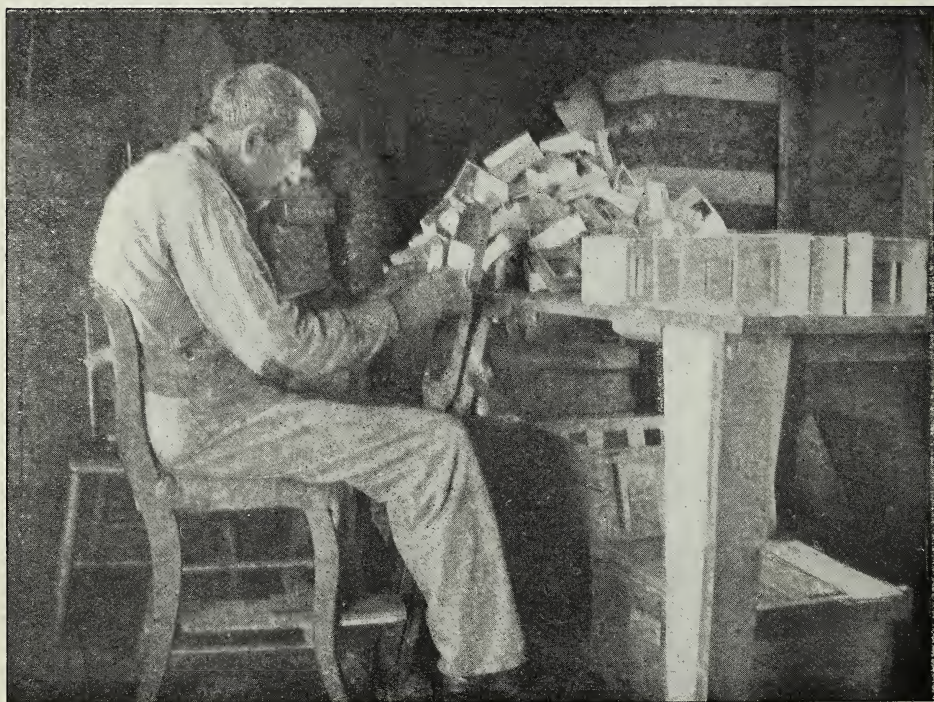
BY HENRY STEWART.

It may be of interest to the readers of GLEANINGS to know what a blind man can do with and for the bees. The accompanying photograph will introduce to you Mr. Steve Hill, of Hillsdale, Ill., a bee-keeper who is totally blind. In front of him will be seen a Daisy foundation-fastener, and he is in the act of fastening foundation in sections with it.

A few years ago Mr. Hill was known as a crack shot by those who handle a gun; and while hunting he was accidentally shot by a companion hunter, and thus deprived of his eyesight.

For several years he has kept a few colonies of bees. Originally he did everything, including securing and taking off the honey. I now look after the honey-producing, that is, the putting on and taking off of supers for him. He does the rest.

With saw and hammer he cuts up lumber and makes his own hives. The one under



A BLIND BEE-KEEPER USING A DAISY FOUNDATION-FASTENER.

his bench is one of them. The bench above is also his work. He hives his own swarms, places them on their stands, prepares them for winter, etc.

I have several yards of bees about Hillsdale, and the last two years he has been doing considerable shop work for me. The last season he prepared ready for the bees 5000 sections, putting a top and bottom starter in each of them, and arranged them in the supers ready for use. By the way, he has discovered a kink in this work that those with good eyes may well follow. You will notice a board projecting from the front of his chair. This is a foot-rest on which he places his foot and operates the spring of the Daisy with his knee, thus allowing him more free use of his hands for the other work. He has nailed up for me nearly 100 Langstroth hives, 500 shipping-cases, besides much other work.

As to the quantity and quality of his work, it will go without saying that a blind man can hardly be expected to excel in speed, but there are those who do less. He prepares ready for the bees from 50 to 60 sections an hour. As to quality, his work needs no inspection, and I never have work done better. He will saw a board straighter than the average man can see; and with a hammer there are very few nails that go amiss, and every thing is put together correct and square.

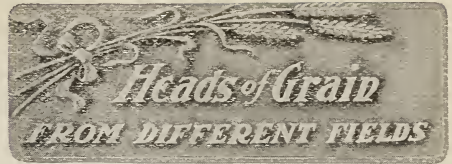
Some may wonder how it is possible for a blind man to hive bees; but it is a motto of Mr. Hill's that, where there is a will, there is also a way; and in his case, when he once sets out after it the way is usually found.

In front of his bees are some low bushes on which his swarms usually cluster. For his convenience he has prepared a light bench, having a chute in which the entrance of the hive just fits. He has always a hive ready; and when he detects the familiar hum of an issuing swarm he seeks the assistance of one who can see, usually his wife, who takes the empty hive while he carries the hiving-bench to a convenient position. The hive is placed in position on the bench, and he is directed to the position of the cluster. When found, his attendant seeks shelter while he does the rest. In this he is more than ordinarily successful, hardly ever losing a swarm or having me do his work the second time.

He owns a farm of 30 acres, and does most of the work of repairing and building fences, repairing buildings, hanging gates, doors, etc., himself. He saws and splits all his own wood, shaves himself and hones his own razor. While Mr. Hill is totally blind, it is difficult for passers-by who see him at work to believe that he can not see.

Prophetstown, Ill., Dec. 28.

[Any man who can overcome difficulties as he is doing, commands our sincerest admiration and respect. You tell him that the editors of GLEANINGS would like to give him a good hearty shake of the hand.—ED.]



WHY ALEXANDER DOES NOT SHADE HIS COLONIES.

In answer to Dr. Miller's third Straw, Jan. 15, I will say, no, doctor, we don't like any shade among our bees, and for these reasons: First, we find the colonies that stand in the shade do not commence work within an hour in the morning or as soon as the colony that gets the morning sun; neither do they work as late in the afternoon; and if the air is somewhat cool for bees to fly in the shade, as is frequently the case here during our buckwheat bloom, then we can see hundreds of them that have dropped on the grass in the shade around their hives that are heavily loaded with honey, and not able to rise and fly to the entrance. Many times a cold rain will catch thousands of them outside of their hives, where they will become chilled, and never fly again. This is the principal reason why we never get as much surplus from our colonies that are so handicapped as we do from the colonies out in the sun. We also lose a larger proportion of our young queens when they take their fly to mate, from hives which are under trees, than we do from those in the sun. Then another reason is, that invariably the colonies in the shade give us much thinner honey than the hives that have the sun all day. This, with us, is the principal reason why we dislike shade in the apiary; for we must have our honey just as thick as we can get it without putting our bees to the useless trouble and expense of capping it before it is extracted. I might give still more reasons for disliking a shade for bees, but I trust these will suffice.

Delanson, N. Y. E. W. ALEXANDER.

DOUBLE-WALLED HIVES BETTER FOR COMB-HONEY PRODUCTION IN THE NORTH.

Having just read the article by Mr. Simmins, pages 1238, 1239 respecting comb-building in single v. double walled hives, I herewith give you something of mine, as you in a footnote ask for the experiences of others along the same line. If you will turn to page 309 of the *American Bee Journal* you will find an article by me touching upon this same subject, though the matter of producing comb honey with and without separators was the more prominent thought. Please read the statement there made, and I think you will readily see why the double-walled hive is preferable for comb-honey production, especially in the North, where we are liable to have chilly nights even in June, when the work of comb-building is at its height. I have often secured a fair crop of honey in

what may be called a poor year, when my neighbors with more colonies have secured little or none at all in single-walled hives.

You will notice in that statement the *fact* of the bees often being clustered around the section case, inside of the space, surrounded by the outside case. Now, the bees are there for a purpose. It seems to me that it is not difficult to determine the reason if one will set himself to thinking a little.

WM. M. WHITNEY.

Lake Geneva, Wis., Dec. 4.

[Your experience is quite in line with ours. We shall be glad to have other reports, whether they agree with the position above stated or not. It is my opinion that the bee-keeper can well afford to pay for the protection around his supers. Winter cases will pay for themselves in the spring and fall and in many localities when producing comb honey. The thing that has an earning capacity the year round is usually a good investment. Now, if we are wrong in regard to the value of this protection, let us have facts to disprove it; but in any event let us not lose sight of the factor of locality.—ED.]

CAN BEES PASS THROUGH A LONG PASSAGE LEADING TO THE ENTRANCE OF AN OBSERVATORY HIVE?

Please tell me whether it would be feasible to use and locate a full-sized observatory bee-hive at a place in a building where the bees could enter only through a skylight and come down about 12 to 14 feet to where hive is standing. Could some sort of funnel or tube be used that distance to connect with hive, or would it be so much obstruction to the access to hive that they would do no good? I would set them in the middle of a room which has skylight immediately over the hive location, about 15 feet above the floor. There is a rotunda in the office building I occupy, and I have talked bees and sold my honey to so many of my friends in the building that they suggested I put such a hive out in the public rotunda, and I think it would pay me as an advertisement to help sell my honey. The office building has 100 rooms in it, occupied by high-grade people.

N. M. JANES.

Paducah, Ky., Dec. 30.

[I never tried to make bees go through a long entrance such as you describe, and do not know of any one else who has; but I should doubt whether it could be made to work. Perhaps some of our readers, however, can tell if this plan has ever been tried, and, if so, whether the bees kept in that way ever worked to any extent. At two of our offices we have bees on shelves outside the window. Whenever we wish to show visitors our bees we raise the window, open the hive, and bring the combs inside where the visitors can see them. If any bees fly they will go to the light. It is a well-known fact that bees will not usually sting inside of a building; so that even the most timid can watch them on the comb, without fear of attack.—ED.]

LONG-TONGUED BEES AND SHORT-TUBED RED CLOVER.

We hear and read much about long-tongued bees and bees that can work on red clover. Now, for fear that some one will breed his bees with too much tongue, wouldn't it be a good idea, if, instead of breeding all tongue, we breed our clover so all the bees could work on it? It would be much better if the heads of clover could be grown smaller than to work too hard on the bee.

Now, who will be the first to put clover seed on the market that all honey-bees can work on? This is no joke, and I should be glad to hear from some one who is capable of writing on the subject. W. G. ROBERTS.

Panora, Iowa, Jan. 24.

[Several years ago, when this long-tongue discussion came up, there were several who proposed developing a short-tubed red clover, but nothing was ever done. That there are possibilities in this direction, as well as in that of lengthening bees' tongues, can scarcely be doubted, providing that time, money, and skill can be devoted to it.—ED.]

AN ADJUSTABLE STORM-DOOR.

I see on page 35 a storm-door over the entrances of bees wintered out of doors. I made some last fall for my bees for the first time, but not like those described. I took a board $\frac{1}{2}$ inch thick, 10 inches wide, 14 long, and nailed $1\frac{1}{2}$ -inch strips around it so as to give a good space outside the entrance. A screw in the upper left-hand corner fastened it to the winter case; and when there is a warm day, all I have to do is to turn it up, and the entrance is all clear. I am wintering 28 on their summer stands.

I have kept bees for twenty years.

Hamlet, N. Y., Jan. 8. J. RICHARD.

PORTLAND CEMENT AND OIL AS A PAINT FOR COVERS.

I saw in a newspaper that Portland cement and oil is an excellent paint for metal roofs. I had some leaky covers for hives that I wanted to make tight, so I thought I would experiment some. After fitting to the tops some cheap muslin I put on a coat of this paint, and nailed down the muslin with tacks, turning down the edge, and then applied two coats more over the muslin, and also a coat of white oil paint. It makes a light and durable cover.

Bellona, N. Y.

W. W. HULL.

ARE STINGLESS BEES LIABLE TO BE A COMMERCIAL POSSIBILITY IN THIS COUNTRY?

I think the bee-keepers of the country should sound a note of warning against the general introduction of the stingless race of bees. I believe that the general introduction of such bees would demoralize or ruin the business of all bee-keepers who are in it to make all or a part of their living. I don't think the bee-keepers of this country want

the stingless bee at all, for they are not afraid of bee-stings, and wouldn't be in the business if they were fearing stings. If the stingless bees are brought to the notice of the public, every timid one who likes honey or thinks there is money in it would go into the business of bee-keeping in a small or extensive way without any previous knowledge of the same, and then where would we be? The general use of stingless bees might be a good thing for all timid persons, the manufacturers of bee-supplies, and those who like to rob bees while the owner is asleep, but not for scientific bee-keepers or for bee-keepers who wish to succeed.

Lemon Grove, Cal.

F. P. WHITE.

[The conditions of climate in most places in the United States are such that it would not be possible for stingless bees to live for any length of time, at least not more than the summer season. We need have no fears that they will be introduced into any locality except the extreme Southern States; and even in these the climate will probably be too cold during the winter for them to propagate to any extent if at all.—ED.]

FEEDING FOR STIMULATING.

What kind of feeder should I use under the hives to stimulate early breeding? How should I place them under the hives?

I have extracted honey. How should I use it? Would it do to mix it with sugar and water?

F. E. ROYS.

Hoosick Falls, N. Y.

[The Boardman or Alexander feeder would answer your purpose excellently. The former is sold by nearly all supply-dealers. It is an entrance feeder in that two prongs are shoved in at the entrance, and the bees gain access to the food by passing out of the entrance into a wooden box through the top of which projects a can with a perforated top containing syrup.

Our usual rule is to mix sugar and water in equal proportions by weight or bulk. If you have some cheap honey you can feed this by diluting it by putting in about 25 per cent of water. But never feed honey without boiling it thoroughly. If foul brood exists in the vicinity, better boil the honey at least half an hour; let it stand for a day or two, and then boil again for half an hour. You can mix sugar syrup in honey if you choose.—ED.]

QUICKLIME AS AN ABSORBENT FOR KEEPING COLONIES DRY IN WINTER.

I should like to know whether any one has ever tried the following plan for keeping bees dry in winter: Place a tray filled with lumps of quicklime over the chaff cushions, or over pads of paper $\frac{1}{2}$ to 1 inch thick where that is used instead of chaff cushions. This lime would take up the moisture, and also purify the air by taking up the carbon dioxide of the breath. This plan would allow the covers on the supers to be shut tight; in

fact, they should be kept perfectly tight to avoid the taking of moisture from the outside, thus making a dead-air space above the bees. Where paper is used I should not have it more than $\frac{1}{4}$ to $\frac{1}{2}$ inch in thickness, thus allowing the moisture to pass upward more readily.

I have never heard of this being used, but it can do no harm, and I should like others to try it with me this winter.

O. W. BRACKNEY.

Upland, Ind., Nov. 16.

[I would be a little slow about using quicklime as an absorbent in a bee-cellar. I am not enough of a chemist to give an intelligent opinion, and therefore would call on some of our readers to give us reliable information.—ED.]

FEEDING BACK UNFINISHED SECTIONS.

When bees are short of stores, why can not a frame be fixed up to hold four or more ordinary sections of honey, inserting this frame in the hive? Most bee keepers have some sections that are badly filled, or with mixed honey in them (that is, light and dark), or bulged, which they would just as soon the bees would clean out as not. What is your idea?

ALBERT ROBERSON.

Lake City, Minn.

[You can use the wide frame for holding sections. Indeed, such frames were sold years and years ago. Two such frames were put on each side of six frames of a ten-frame hive; but the plan that you contemplate would work very slowly—that is, it would take the bees a long time to empty the honey out of the sections if they would do it at all. The most satisfactory way is to set them outdoors and let the bees rob them out. But never do that in a yard that is close to the highway.—ED.]

SELLING HONEY; THE ADVANTAGE OF ADVERTISING WHEN A GOOD QUALITY OF HONEY IS PRODUCED.

My honey is nearly all sold to consumers direct, at 7 to 10 cts. for the white, and 6 to 9 for the dark. The latter was sold this year before it was off the hives. I extract only well-ripened honey, leaving it on the hives as long as possible. I never had one complaint, and my customers take it either way, candied or liquid. I never had a bit of trouble on that account. If the poor grades of honey were kept off the market, whether comb or extracted, there would not be enough good honey to equal the demand. Put only a good quality of honey on the market, and our product will not go begging. A lot of bee-keepers sell their crop for what they can get, while if they would work their home market their labors would be well rewarded.

I am sending you one of my circulars. You will find that I have taken some of the wording from labels contained in your label

catalog. It has helped me to sell nearly all my honey by sending it broadcast.
Augusta, Wis. E. H. HANSELMAN.

[The circular referred to is well gotten up, and not a cheap poorly written affair by any means. The arguments given, though brief, are interesting and convincing. A picture of an extractor is shown, with a few words explaining its use.

Surely, this method of advertising can be carried out by any man who has honey to sell; and if the honey is worth selling it is worth the time and trouble necessary to get a good price for it near home.—ED.]

ROACHES HARMLESS IN SOME LOCALITIES.

In reply to a question asked by Mary Wood, page 97, how to get rid of roaches, I will say that I live in the South, and that roaches are not so very plentiful about here; but I have had a good deal of acquaintance with them, and find them perfectly harmless, and, in fact, I like to have them about. They are a help to me in the apiary, and I don't see how I could get along without them. MRS. J. M. ROACH.

Daisy, Ga., Jan. 26.

[So there are roaches and Roaches. Evidently the latter are not a rep-roach to the name.—ED.]

YELLOW SPIDER AN ENEMY OF BEES.

I mail you a spider, or at least I think it one, that is death to bees. It makes its home on what we call a wild sunflower, which is very yellow, and differing in size from one inch in diameter to three inches. We have thousands and thousands of acres of it here, and the bees work on it in August until frost kills it. The spider sits on the flower, and you can not see it unless it moves; and when a bee alights on the flower, and is in the act of bending its head in order to reach the nectar the insect grabs the bee behind the head, and it never moves nor struggles. It is just simply dead. I could not find any thing that looked like a web nor any trace of any thing of the kind. The insect is a very bright yellow. MATT. S. SCHWER.

Peale, Pa., Nov. 10.

[We sent the spider to Dr. Phillips, at Washington, for examination. His reply is as follows:

Dear Mr. Root:—The spider referred to in the letter from Mr. M. S. Schwer is *Rimcinea aleatoria*, Htz. I do not know to what extent this spider is to be considered as an enemy of the bee, but it is undoubtedly true that bees alighting on flowers are frequently killed by these and closely related spiders. These spiders do not spin a web; and their method of killing their prey, either bees or other insects, is as described by Mr. Schwer. Mr. Nathan Banks, of this Bureau, who has identified this specimen for me, says that they sometimes kill good-sized butterflies. E. F. PHILLIPS,

Acting in Charge of Apiculture.

RAINS IN CALIFORNIA.

This part of California is now (Jan. 15) getting a good rain, and reports indicate that it is general over at least the western (coast) counties. At this date last season we had 16 inches. So far this season the downpour has been but 5 inches. There is plenty of time yet for rain, and a good honey season; but so far it has been colder than usual, and vegetation has been kept back. TRANSIENT.

Watsonville, Cal.

FEEDING BEES BY SPRAYING LEAVES.

In a recent issue of GLEANINGS I see the suggestion made by a western brother, that we might feed bees by spraying the green leaves of trees or bushes with the food. I have successfully fed my bees by that means during the past fall.

I was at first very much interested and amused with the antics of the bees. They were not accustomed to finding food on green leaves; and wherever I placed colored leaves, bits of paper, or holly-berries they would alight in numbers. The yellow-jackets and hornets, however, were first to find the food on the green leaves, and after a time the bees lost no time in going directly to the sprayed leaves for their food. They found it, and took it better when a little honey was mixed with the sugar syrup. When the air was dry the liquid quickly evaporated, and became a mere varnish on the leaves; but this difficulty was overcome by respraying with tepid water. It was the most successful and satisfactory method of feeding I tried. H. A. SURFACE.

State College, Pa.

[I believe your plan of outdoor feeding is all right. It will eliminate entirely the objection on the part of the bees struggling against each other and wearing themselves out. Indeed, it would approach more nearly the condition of a natural honey-flow than any other plan so far advocated. The only objection is that I should be afraid that some of the syrup would drop on the ground and be wasted. Sugar is rather expensive to throw away. With a heavily leafed tree and a spray not too large, this difficulty would not be very important. A spray-pump with a long piece of quarter-inch gas-pipe that would direct the spray clear up to the top of the tree, where it could fall down from leaf to leaf, would be the thing to use.

It just occurs to me that some one else has described something similar. Indeed, I recall that one correspondent spoke of spraying grass. But this surely would result in quite a large waste, as the thin syrup would soon find its way to the ground, and be absorbed. I should like to get reports from those who may have tried the same plan.—ED.]

BEES NOTICING COLOR; SMOKER FUEL.

That bees have a preference for colors I believe will be accepted by most bee-keepers. This fact has been brought out by various experiments conducted by Sir John Lub-

bock. The writer, while wearing a dark shirt with white oversleeves, had occasion to examine a colony of bees the past season; and while the arms were in continual motion no attention was paid to them; but the bees seemed to have an extreme hatred for any exposed spots of the dark shirt. I went through the colony a few days later with light-colored clothing without any trouble whatever. From this and similar experiences I have decided to wear white coat and pants while manipulating colonies in the future.

For the average bee-keeper I doubt if there is a smoker fuel that will supersede corncoals in any way. They are something that can be found around almost every home; and, when cut in two-inch lengths, and placed on live coals, will produce a volume of cool smoke and not go out. I have had a smoker full of this fuel run for six hours, and then go out only after every vestige of fuel has been consumed.

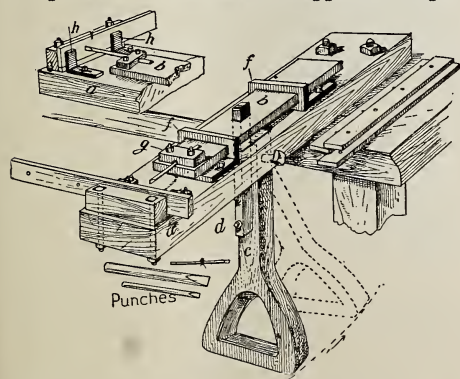
Nisbet, Penn.

GRANT STANLEY.

[I think it can scarcely be doubted that bees recognize color a great deal more than we suppose. There have been quite a number of reports showing that black is distasteful while white is not objectionable. The fact that nature variegates the entire floral kingdom with bright colors goes to show that it is done for a purpose—to attract bees. Corncoals make a very excellent fuel; but one will ordinarily have to ignite them by means of live coals or a little coal oil or some more ignitable fuel.—ED.]

A MACHINE FOR PUNCHING HOLES IN THE END-BARS OF FRAMES.

Here is a drawing of a machine—a frame-perforator. When the ordinary bee-keeper takes a first look at it he will be pretty sure to decide he can not make that—it is too complicated. The reason it appears compli-



cated is because he looks at the whole machine instead of each small piece by itself. I have had this machine several years, and it has given me a great deal of satisfaction—a satisfaction that can not be figured in dollars and cents. But if there were 800 frames to be drilled for foundation wires I

believe this machine could be constructed, and the frames punched, in less time than the work could be done by hand. The construction will be sufficiently clear from the illustration.

The punch should be shaped like a chisel edge, and inserted in the machine in such a way that it cuts squarely across the grain of the wood. For material in making this I cut up a sacking or broom needle, and file or grind it to the proper shape. It should be about $\frac{3}{8}$ or $\frac{1}{2}$ inch in diameter, and 2 inches in length. Most of these pieces of metal, if they can not be procured from the scrap-heap or old worn-out machinery to be found on nearly every farm, can be found in the odds and ends at almost any blacksmith shop. The drilling can be done by hand or by the blacksmith.

Chatsworth, Cal.

C. W. DAYTON.

[Where a tool is forced without any twisting or twirling motion right through the wood the hole might be somewhat ragged, but perhaps that will do no harm.—ED.]

TO WHAT EXTENT DO BEES HEAR?

In *Stray Straws*, page 1291, Dr. C. C. Miller makes this statement in reply to W. M. Whitney: "As I think you are a bee-keeper rather than a naturalist, friend Whitney, I venture the remark that it is not a question as to whether bees hear; it is pretty certain that they do hear, and that they hear sounds inaudible to the human ear; but the question is, whether those sounds have the slightest effect in making swarming bees cluster."

Will our experienced bee-keeper please state some facts from his experiences that lead him to think that bees hear, especially that they "hear sounds inaudible to the human ear"? Also will he kindly state the positive point of view—what does make a swarm of bees cluster? Is the queen the first to start the cluster? If not, where does she come in, and why?

Stamford, Ct.

EDWARD F. BIGELOW.

[Dr. Miller generally says, "I don't know" when asked to make a positive statement; but I am of the opinion it will be a little difficult for him to furnish the absolute proof that Prof. Bigelow calls for. Well, doctor, get up on the witness-stand and take your cross-questioning.—ED.]

MOLD AND MOISTURE ON COMBS OF COLONIES WINTERED IN A CELLAR.

I should like a little information in regard to wintering. I put my bees in a dry cellar, but the combs will sometimes gather a green mold; moisture will form on them sometimes in drops, and the honey seems to sour. The bees in such hives will often die; but if the outside combs only are affected they come through all right, and these combs dry over or are cleaned up by the bees when set out. I have just looked over my bees in the cellar, and it is appearing again—in some quite badly. I thought it lack of ventilation, and

have left the covering off two inches from ends of frames, and raised the hives a little off the bottom-board in front. Is there any other remedy you can suggest?

Franklinville, N. Y. W. A. HILL.

[The mold described is like what many have observed on the combs of bees wintered both in and out of doors, except that what I have seen is of a bluish rather than of a greenish tint. It is generally believed that this does no harm, so I think you may look elsewhere for the cause of your bees dying. I would give plenty of ventilation in any case, and should naturally suppose that the mold was due to too much dampness rather than to a lack of ventilation. The mold is only an incident or a consequence of the dampness, and not the source of the trouble, I should say.—ED.]

GREAT SUPERIORITY OF ITALIANS OVER BLACKS.

This has been the worst year for bees that we have ever had. Nearly all the black bees will die this winter; but the Italians will be all right, as they made honey from red clover, white clover, and Spanish needle. Last fall I sent to Ohio and got four red-clover queens. I did not get them until Oct. 13. I introduced them to black colonies, and they are all right. One queen laid after I got them, and hatched some fine bees. What I want to ask is this: I have nine colonies of black bees. How can I keep them from mixing? Can I put queen or drone traps on all of the black colonies, and keep the drones from flying until I can requeen with Italian queens? Can I raise queens early enough in spring to requeen these hives in time for white clover, or would it be best to send and get tested queens?

Moran, Kan., Jan. 8. J. N. THOMPSON.

[Yes, you can put drone-guards or Alley traps over the entrances of all hives containing black bees; but I would advise killing the black queens first and introducing Italians. If this is done early enough in the spring you will not be troubled with drones, and there will be no need of your using the perforated metal.

You would not be able to raise queens early enough in the spring to requeen. These you would have to get of some queen-breeder in the South. If you buy of some established queen-breeder who has reared nothing but Italians for many years, there would be no very great advantage in buying tested, for the reason that practically few of the untested will prove to be impurely mated.—ED.]

DEAD BEES IN NOVEMBER.

Is it something natural to see dead bees lying on the bottom and in front of the hive in November? C. & E. TRACHSEL.

Helena, Mo., Dec. 4.

[I should say it is quite a normal condition to find dead bees on the bottom-board of a

hive and in front of the same early in November. The bees that have stood the brunt of the toil on a late fall flow or clover flow in July would begin to be giving out. We must remember that there is a constant depletion of old bees, and there should be a constant renewal of young bees so that the colony may retain its normal strength. You will notice that, immediately following a heavy honey-flow, the queen will stop laying to some extent, and for a while there will be a limited amount of brood hatching. You will note that, even during the summer, the colony as a consequence loses strength.—ED.]

WHAT RENT SHOULD BE PAID FOR UNUSED LAND?

What should I pay for the privilege of setting some of my bees on another man's land through the summer? I tend them myself, and the land they occupy is not in use. The bees would not inconvenience him in any way.

WM. SENFF.

Bremen, Ind., Dec. 22.

[We pay at our yards at the rate of 10 cents per colony, with a minimum of \$5.00. Some pay as high as \$5.00 without reference to the size of the apiary.—ED.]

NUMBER OF COLONIES NEEDED TO POLLENIZE AN ORCHARD OF TEN ACRES.

The Central New York Farmers' Club is to take up the question, "How many colonies of bees does it require to pollenize an orchard of ten acres?" I have never seen anything in regard to this in any of the books on apiculture or in the bee journals. I shall esteem it a great favor if you will give me your opinion.

B. W. WOOD.

Deerfield, N. Y., Jan. 8.

[This is a hard question to answer, as there are no data on which to base an estimate. Ten colonies might do the work, but probably fifty or a hundred would be much better.—ED.]

BEEWAY OVER THE FRAMES IN WINTER.

As I am much interested in your paper, I should like to ask you a question. Is it necessary to have a beeway between cushion and frames for winter?

Helena, Mo.

E. TRACHSEL.

[Yes, by all means there should be a passageway over the tops of the frames.—ED.]

A CORRECTION.

I notice a typographical error in my description of a Cuban honey-house, page 93. The bee-escape strips and openings should be $\frac{5}{8}$ instead of $\frac{3}{8}$. Some fellow might pitch into me about a $\frac{3}{8}$ beeway.

C. F. HOCHSTEIN.

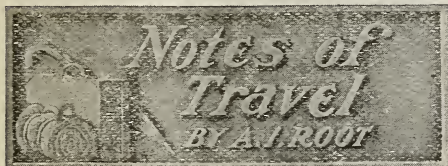
Punta Brava, Cuba.

COMPARATIVE VALUE OF WAX AND HONEY.

On page 1177 you speak of the comparative value of wax and honey. As I am situated I want to produce the maximum of wax and the minimum of honey, and I shall be greatly obliged for any information as to your methods of producing wax or the best known method of producing the most wax possible.

Cibola, Ariz., Dec. 14. R. M. SWAIN.

[You will find an article on this subject by W. K. Morrison, on page 336 for April 15th, 1903, that covers the ground very exhaustively.—ED.]



CONTINUED FROM LAST ISSUE.

During the work Mr. Shumard said somebody told him, years ago, that taking measurement *on a stick* was much safer and quicker than using a square or rule, and that the idea had been worth a great deal to him in carpenter work. When I began to laugh he said:

"Why, sure enough, that was something you wrote in GLEANINGS years ago, was it not?"

The work of the past two weeks has brought to mind my father's teachings, of more than fifty years ago, so vividly it has almost seemed some days as if I could hear his voice. When I was only about sixteen I did most of the work on the frame house that replaced the log one in which I was born. Of course, I worked slowly, and I now realize that father was more anxious to have me learn correct principles in the carpenter's and joiner's business than to get along fast. He gave me the reasons for going slowly, and explained how time is lost in not cutting *exactly* to a mark made with a "sharp knife," having the work square and every thing level, having the tools always in the best of order, etc.

The Phantom was delayed by bad weather, and all hands were waiting anxiously for "our ship to come in," for almost a week. Every morning I would say:

"Now, friends, are you sure all your tools are in tiptop order? Have you good sharp cut-off and rip saws? Are the hatchets, chisels, etc., all sharp? Have we plenty of good hammers? Are there any tools loose on the handle?"

As the boat didn't come I went over the tools again next day, and every time I found something that could be bettered. Some tools had been borrowed and not returned. Hammer-handles broke, and no timber was ready to make another one quickly. When I offered to pay for time of getting tools in

readiness, I was kindly reminded of my old father again. He used to say, "A carpenter who comes on a new job and begins to grind up his tools on his employer's time is usually 'docked,' as he certainly ought to be."

By all means go and pick out your lumber. Get exactly what you want, even if you pay extra for it, and see that culls are not sprinkled in, when you pay for No. 1. This will take time, but it is time well invested.

Be sure your *foundation* is good as well as your roof. Doors that stick are apt to be wrenched out of shape or pulled to pieces; and sticky doors are the result of a building that settles out of shape. Of course, a carpenter can plane them off; but it is so often neglected that "prevention is much better than cure." Be sure every thing is thoroughly nailed. A few more nails will often enable a building to resist a severe wind-storm.

Furniture is very expensive down here because of freights from the distant factories in the North, and the danger of damage in transit. The \$150 mentioned included over a day's work in making "home-made" furniture. I bought at the near-by store four drygoods-boxes at five cents each. The store-keeper wanted them out of the way. One of them made a "kitchen table" in this way: The top was removed, the box turned on its side, and some legs nailed on so as to raise the table to the proper height. Then the boards taken from the top were put in half way down, on cleats so as to make a shelf, and there you have a very handy table with top, and *two* shelves underneath, and a place under all to put things out of the way. The rough boards can be covered with newspapers, to be replaced when soiled.

Another box, with shelf in as above, makes a handy safe in the back shed. Things can be set in while standing in the back door, for it is so high up, fastened against the wall, that one can walk under it. It is also too high for cats and dogs to be likely to trouble it if the wood-shed door is left open. Our dining-table top is made of bits of flooring that was left, with legs of inch lumber, tapered, and two pieces nailed together eave-trough fashion. The stand on which I am writing these notes was made this afternoon of bits of board and the drygoods-boxes. I think it quite pretty, and it cost even less than you could buy it of Montgomery Ward, and no freight to pay. Eave-spouting here costs 10 cts. per foot, and the salt spray rusts it so quickly that almost everybody uses wooden ones made of strips put together with paint. Ours are nicely put up, and ready for rain.

HEALTH HINTS—EXTREME SIMPLICITY IN DIET.

During all the fall months, and until I came to Florida, I kept up my fashion of eating apples regularly about 7 P.M. As my system became accustomed to this regular evening fruit meal I felt lost without it; and after the few apples were gone that we brought here with us I began to use oranges instead; and now after using them right along for nearly

two months I not only find them conducive to excellent health, but I think I never enjoyed any fruit more than I do my oranges and grape fruit every evening. We get oranges here, with some little blemish on them, for from 50 to 75 cts. per hundred, and these are just as good for present use as those packed and shipped. You know how much I have said about a simple breakfast costing only a few cents, saving the good wife a lot of work. etc.; well, T. B. Terry, in the *Practical Farmer*, has lately got on to the same line with a vengeance. I clip the following from the issue of Jan. 6. The stars indicate where I have skipped, and I have changed one sentence to italics.

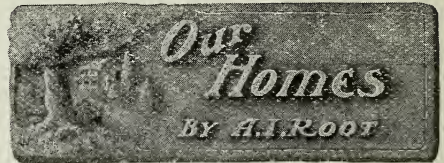
The experiences of those who were living on raw food were so decidedly in favor of that plan that I felt there must be something in it more than a mere fad. * * * and good health is far from being a general condition now. Look at the vast number of doctors and drug-stores * It is an interesting study to try to find to what extent the eating of cooked food, and the hundreds of mixtures that have resulted, has caused the ill health of the people and brought death practically always before it resulted naturally from old age. * *

The change was made very gradually and carefully. It took much less time to get used to the change in my own case than I at first expected. Now I will tell you just what I do eat. For breakfast, after about one and one-half hours of light exercise, two ounces of rolled wheat, dry and uncooked, with butter and olive oil, and then what raw fruit I care for. We eat only twice a day. For supper I have about two ounces of raw nut meats, and raw fruit. For a month at a time I have eaten nothing else whatever. At other times I have taken a little plain cooked food, so my stomach would remain somewhat used to it, as I must be away from home occasionally. But practically I have lived on the raw foods named. * I never got more enjoyment out of eating. I have never once been hungry between meals. But remember there is long chewing, and I eat all the fruit I like. It seems as if I never had such perfect health before, and I have waited to report until the newness has long since passed away. The cost of rolled wheat is one cent a day. I use Pettijohn's breakfast food, which is nice and clean. The nuts cost, at wholesale, about four cents a day. We have various kinds, but I do not seem to care for any change. Walnuts have been eaten mainly, because I like them, and they are easy to crack and pick out. I eat apples freely in the winter season, with dried fruits, bananas, etc., mixed in. We have had, of course, strawberries, raspberries, blackberries, peaches, pears, melons, grapes, etc., in their season, with dried fruits always on hand to fall back on, or eat with the fresh. The dried fruit is soaked, not cooked. I never eat a meal at home without fruit. Sometimes I get tired of one kind of fruit, showing that my system has enough of that particular acid. Then I let it rest. We have a variety always. The rolled wheat tastes delicious to me. As a rule I take a little choice butter on a spoon and then fill the spoon with dry wheat and put in my mouth, and chew a long time. I prefer it to the best bread. A tablespoonful of olive oil is eaten for breakfast, with a little lemon juice mixed in it, along with the wheat. * * * All the trouble I have had with the system so far is that it makes one an odd sheep. After they get used to the change, both stomach and bowel digestion become practically perfect, with no possibility of any constipation. I tell you it is a great big matter to have perfect digestion and assimilation. * *

Notice the extremely small amount of food eaten, deducting the water in fruit, always less than a pound a day, actually. And still I have held my own quite steadily in weight; fully plump enough; no surplus fat anywhere; 5 ft. 10 and weigh 176; perfectly nourished, beyond question. I used to eat three times the substance and do no more work. * * * I tell you it was fine during the hot weather to put some wheat or nuts and fruit on the table and have the meal ready. It is a wonderful saving in work.

* Some might criticise the simple ways of living here in Florida; but our neighbors, the Shumards, have raised a family of eight children, and haven't employed a doctor in eight years. Some people would think a doctor is needed about every eight days with such a family.—A. I. R.

Terry says when he is obliged to be away at hotels he always feels glad to get back to his simple home life; and Mrs. Root and I, after paying \$14.00 a week at a hotel, were happy to get back to our home fashion, with just a few simple things that cost little money and little work, but were just exactly what we wanted, and *nothing else*. Of course, *we* are not yet ready to go with Terry and dispense with cooking entirely. Mrs. Root is anxious to know if Mrs. Terry also lives on uncooked "grains, fruits, and nuts."



Is not this the carpenter?—MARK 6:3.

THE BEE-KEEPER'S WORKSHOP.

The average honey-producer must have a workshop of some kind; and in California, and sometimes in Florida, I have found just a workbench in the open air; but here, where rains are frequent at almost every season of the year, at least a roof overhead of some kind is needed. I have told you that ours was only 10 feet square, and open under the eaves, on the west, and also on the south. I soon found, however, this did not suit my notions. A big rain storm not only wet my stuff, but the spray blew over on my bright new saws hung up on the north wall. Another thing, neighbor Shumard's 150 Buff Leghorns decided my neat little shop was just the place for nests; they tipped over and mixed my cans of small nails, came near tipping over my high-priced paint, and I finally decided both weather and chickens must be fenced out. I thought of cloth and building paper, but they are likely to get "punctured," and look untidy any way, so I bought some more planed lumber (dressed on both sides and edges) at \$24.00 per 1000, and did it up right. I have visited beekeepers' shops and extracting-rooms all over the United States, and, while I have seen a few very pleasant and tidy ones, I have seen more that—seemed to require an apology from the owner.

If you want a nice pleasant shop, where you will always like to go in bad weather, I would not think of having honey, wax, and the extractor in the same room. Have a honey-house somewhere else, or divided off from the shop. There are many obvious reasons. One is that we want both *light* and outdoor *air* when we are at work. Whenever the weather will possibly admit, "outdoors" is the place to work. With this in view, our workbench is 16 feet long, so that 8 feet of it is always outdoors, and on this outdoor part most of my work is

done. A door that extends to the roof comes down on top of the bench; and when this is swung up out of the way the whole top of the bench is clear. Another door from the ground up is right beside the bench. A third door or, rather, shutter, that extends from the top of the bench up under the eaves can be dropped down so as to get daylight and air from the west. This shutter is 10 feet long horizontally, and $3\frac{1}{2}$ feet wide. With these three doors our workbench is all outdoors when the weather will permit; but in a twinkling we can have every thing safely housed at night or when a storm comes up.

In order to have all tools and materials nicely put away I copied Mrs. Root's cupboards made of drygoods-boxes. These are nailed against the wall and in corners, at a convenient height. In this way all my materials for nucleus hives are neatly stacked up, convenient to hand, without the necessity of stooping over to pick up the different parts. Our friends who are over 60 will appreciate this idea, even if the younger ones do not. Elderly people ought to learn the importance of having every tool *constantly in place*. Suppose you were holding something in a cramped place until it could be nailed fast, and all at once the hammer disappears. You twist your neck, and kick around in the rubbish, "Where in the world can that hammer have gone to?" Well, Mrs. Root fixed two nails so the hammer would just hang between them, right by the door that leads from shop to kitchen, and we both agreed the hammer should be hung up in place when not actually in use; and I have found by experience it is cheaper to take a step or two to put it *in place* than to be annoyed by "hunting for the hammer." Just so with hatchet, saws, and a lot of other tools.

A GOOD PLACE TO NAIL UP WORK.

An ideal workbench would be one with a planed cast iron top. In the factory at home we have planed iron slabs that can be carried about, on which small work is to be placed when nailed. I have seen a bench-top made of 3×4 maple studding, bolted together so as to make a four-inch plank. A two-inch hardwood plank, bolted or nailed so it can not warp, makes a fair bench-top. Do the best you can to get something solid, but don't think of trying to drive nails on a springy inch board, with every thing rattling and bouncing up and down at every blow of the hammer. One of the nicest nailing-places is a slice of a log so as to make a block 2 or $2\frac{1}{2}$ feet high. If you have never tried such a block, just see how nice it is for nailing, or for using an ax or hatchet.

Have a good assortment of all sizes and all kinds of nails. Keep each kind in a tin can and don't have them mixed all sizes. You'd better throw away mixed nails and buy new ones if your time is worth any thing.

You may have the nicest lumber, the best cutting tools, and do a first class job, and then spoil it all by bad nailing, because you have not the proper nails or a good solid

place to rest your work. When my work finishes up complete just as I had planned it (or better still), I feel like singing Gospel Hymns; but when the boards split, the nails double up and go the wrong way, and I get my fingers pounded in trying in vain to remedy matters, I don't think (or feel like) Hymns at all.

Learn to cut boards square as machinery does it; and if your stuff is small, say boards six inches or less wide, use a well-made miter-box. It saves time, for you do not need a square or try-square, and every cut is exactly right. Another thing, if you use a miter-box, all odds and ends of lumber, all remnants, can be classified and stored overhead, or under the workbench; and when such a piece is needed, it is thoroughly seasoned. The pieces left in building our cottage, when assorted and put away, have helped us to make a lot of "household conveniences." As an illustration:

My correspondence was getting all in a heap; letters answered and unanswered were all mixed up. I told Mrs. Root I must have some sort of desk or secretary. She said I could make something that would do for the short time we had to stay, etc. Well, I put up a wide shelf in one corner of our best room. On this shelf I placed some empty "twin nating-boxes" (see p 18, Jan. 1), laid down on their sides, and I have the nicest kind of pigeonholes for letters, etc. By leaving off the bottoms you have a very neat and convenient "sectional book-case" on a small scale. Each little hive has two compartments for letters, and the feeder-slots make two more. For instance, put your answered letters in the left-hand lower shelf; right-hand, unanswered; postal cards in lower feeding-slot; stamped envelopes in the left-hand upper shelf; postal cards, right-hand; stamps, upper slot; mail ready for office, on top. Eight places in each box. Another box will hold all your stationery in an orderly manner. If your shop has a stove it will be a nice quiet place to attend to your correspondence.

Last, but not least, if you are as old as I am you will need a comfortable seat of just the right height for your nailing-block; and when you are tired of sitting down, stand up and work at the workbench.

Now, friends, I hope you may find as much happiness and real enjoyment in *your* workshop as I have found in mine; and I am sure it will save you money that might otherwise go to a carpenter or to buy expensive furniture. May God bless these suggestions in regard to a humbler adjunct to "Our Homes;" and while you are learning (even in your old age) to be an expert carpenter, keep in mind it was the occupation our Lord and Savior followed in his early manhood, while here in this world of ours.

*Tin cans are very good nail-boxes, but small shallow tin pans are better because they can be nested and occupy less space, using a very small size for the smallest nails, and larger pans for the large sizes. Two if not three sizes of hammers are needed, according to the sizes of the nails to do the best work.

Regarding Our Advertisers.

† The St. Louis Seed Co., St. Louis, Mo., claim to have originated a tomato seed from which the largest tomatoes known are grown. This company will send a sample packet of seed and their illustrated catalog free to our readers. This offer is made in their "ad't" on p. 247

The Wood Co., Medina, Ohio, whose advertisement appears on page 247, are starting a mail order department for their seed trade. They carry all the leading varieties of clover and timothy seed, and will gladly send samples and prices upon application. The editors of GLEANINGS do not hesitate to recommend this company as a reliable firm.

† The Bee and Honey Co., Beeville, Texas, wish to announce to their friends that they have purchased the Atchley steam bee-hive factory, and have moved the same on the railroad track in that city, and it will be their aim to give the bee-keepers an up-to-date bee-supply house, with better accommodations than ever before.

Any one who is planning to plant a garden this season should begin to select the varieties of vegetables and flowers he will use. The Storrs & Harrison Company's catalog will be found a very helpful guide in making such selections. This company is located at Painesville, Ohio, and will send their catalog free upon request.

The 74 page catalog which is sent free to applicants by the American Incubator Co., Freeport, Ill., is as complete and instructive an incubator and general poultry book as we have seen. The illustrations of the twenty-six varieties of poultry which this company handle are exceedingly good. Their Incubator advertisement appears on page 248.

† Burpee's Farm Annual for 1909 has just reached us. We do not believe that we have ever seen a finer example of color work in connection with seed advertising than is shown in this catalog. There are more than 150 pages filled with illustrations, descriptions, and matters of interest to people who have gardens for pleasure or profit. See the Burpee ad. on page 248. They will send their Annual free.

The Cyphers Incubator Co., of Buffalo, N. Y., claim eighteen distinct points of improvement in the 1906 model of their incubator. So many improvements in an incubator, already considered almost perfect, must be one which will give exceedingly good results. In the Cyphers advertisement on page 241, they offer to send their catalog of 228 pages entitled "Poultry Raising Made Easy and Profitable," without charge.

The Hart Pioneer Nursery Co., Fort Scott, Kansas, whose ad't appears on page 248, is one of the oldest nursery companies in the United States. At their modern nursery and packing grounds they have installed every convenience which will facilitate prompt and careful shipping. If you are in need of any thing in this line, either wholesale or retail, send for the Hart catalog and get them to quote you on your wants. This company has a very high commercial rating, and guarantees absolutely square business dealings.

Mr. G. M. Clark, president of the Cutaway Harrow Company, Higganum, Conn., is an authority on grass culture. We have received a booklet on this subject which is a copy of an address made by Mr. Clark. It is very interesting and instructive to any one interested in the subject of raising grass for profit. Mr. Clark says that intense cultivation is the main spoke in this work. Send for a catalog which is prepared for distribution, and ask for a copy of Mr. Clark's lecture. You will be well paid by doing so.

Mr. Lawrence J. Farmer, the strawberry man of Pualaski, N. Y., says that he began fruit-growing and gardening when he was thirteen years old. Surely a man who has been selling strawberry-plants for as long a time as Mr. Farmer must give an exceptionally good quality of plants, and have square business methods if he has retained the confidence and custom of his patrons as has Mr. Farmer. Mr. Farmer's advertisement appears on page 247. If you are thinking of planting strawberries this year you will act wisely in writing to him for information.

Try It at My Expense ---not Yours

IF YOU are not a reader of MUNSEY'S MAGAZINE I want you to become one. I want you to know what it is like, and to know at my expense, if the magazine does not suit you. If it does suit you, and the price is right, you will naturally wish to pay for it. There isn't much in the theory of getting something for nothing. MUNSEY'S Magazine is worth your knowing. It was MUNSEY'S Magazine that led off a dozen years ago in the low price for magazines—ten cents a copy and one dollar by the year. It was the fight we had with a giant News Company monopoly that made MUNSEY'S Magazine possible, and that blazed the way for all other publishers whose magazines are issued at the price of MUNSEY'S. But this is too big and too graphic a story to be told in this advertisement.



MUNSEY'S MAGAZINE!

has the biggest circulation of any standard magazine in the world—much the biggest. And it has made it and held it solely on its merits. In a dozen years we have not spent a dozen cents in advertising. We have no agents in the field—not an agent anywhere—we have given no premiums, have clubbed with no other publications, and have offered no inducements of any kind whatsoever. We have made a magazine for the people, giving them what they want, and giving it to them at a right price—that's all. And the people have bought it because they like it and because they could buy it at a right price. Our object in advertising now is to reach a few hundred thousand new readers—people who are not now taking MUNSEY'S MAGAZINE.

A Ten Thousand Dollar Magazine For Ten Cents

Though there are a good many three dollar and four dollar magazines in America, there is none better than MUNSEY'S, whatever the price—not one. There is no higher grade magazine, there is none better printed or printed on better paper, and there is none better or more carefully edited—none better written, and few, if any, so interesting. It costs in round numbers about *ten thousand dollars a number* to go to press on MUNSEY'S MAGAZINE. That is to say, if only one copy were printed it would cost ten thousand dollars, but spreading this cost over our entire edition of *750,000 copies*, the amount gets down very thin on each individual copy.

When I first made this price, a dozen years ago, everybody said it was impossible—said we couldn't live—said we were bound to fail. We did live, however, and today are publishing a *thousand tons* of magazines a month, which is fifty car loads. This is more than three times as many magazines as were issued by all the publishers combined of the entire country when I came into the business.

It is because I am so sure of the merits of MUNSEY'S MAGAZINE, and so sure it will please you, that I am now offering to send it to you without any money in advance, and without any money at all if it does not please you. I can afford to take this chance, which, as I see it, is a very small chance, because I believe thoroughly in the rugged honesty of the people. The percentage of dishonesty among the citizens of America is far too small for consideration in a business proposition of this kind.

There is no trick in this offer—no hidden scheme of any kind whatever. It is a simple, straightforward, business proposition which will cost you nothing unless you wish it to.

The All-story Magazine also Free

I will not only send you MUNSEY'S MAGAZINE, as stated above, but will send you three months free, in addition, THE ALL-STORY MAGAZINE, which is another of our publications. I add this other magazine for two reasons. First, that you may have the choice of two magazines, and second with the thought that you may want both.

If this proposition interests you, and I hardly see how it could be made more to your interest, kindly fill out the coupon in this advertisement and mail it to me, and you will get the magazines as stated herein.

FRANK A. MUNSEY, New York

17c

You may enter my name for one year's subscription to Munsey's Magazine, for which I agree to pay you one dollar (\$1.00) at the end of three months, providing I find the magazine to be what I want.

In the event that I do not care for the magazine, I will so notify you at the end of the three months, in which case I shall owe you nothing.

It is further agreed that in connection with this subscription you are to send me The All-Story Magazine free for three months, and that I am to have the option of changing my subscription, if I so desire, from Munsey's Magazine to The All-Story Magazine for the balance of the year.

Name _____

City _____

Date _____

1906.

State _____

FRANK A. MUNSEY, 175 Fifth Av., NEW YORK

Let Me Tell You the Special Price On This Genuine 1906 Chatham Incubator

YOU see we make more incubators than any other concern in the world.

We have two big factories equipped with every up-to-date labor-saving appliance. We buy lumber in immense quantities.

And turn out from six to seven hundred Incubators a day.

This means high grade machines at low cost.

Now we are after the trade with an Incubator of up-stairs quality at a down-stairs price. And to prove to you that Chatham Incubators are the best made, we are willing to let you try one 84 days **FREE**.

You can take off four hatches, and, if the machine isn't exactly as represented send it back at our expense. Could we make a fairer offer?

But we go further even than this and guarantee every Incubator we sell for five years—a direct iron-clad guarantee. Send for our **FREE** Catalog today.

Your name and address on a post card mailed at once gets the whole story by return mail.

The Manson Campbell Co., Ltd.

216 Wesson Avenue,

Detroit, Mich.



Hatch and Brood AT SAME TIME

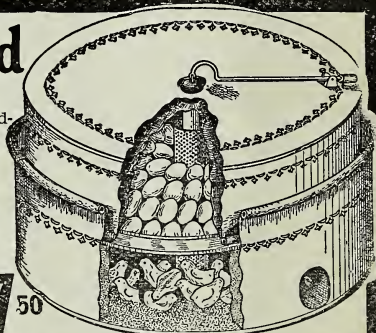
Here's a new thing—a complete hatcher and brooder, one machine that performs both of these operations at the same time and does both well. The

METAL MOTHER Brooder-Hatcher

is a long step ahead of all others—the most remarkable invention in the poultry world. With it 2 qts. of oil hatches 50 eggs and broods the chicks—brood one hatch while you make another hatch. Our nest system enables you to do this. A

time-saving, labor-saving, oil-saving machine complete for \$7.50. Free catalog—tells how it works. Regular Cycle Hatchers and Brooders at \$5 each are great favorites. Write today.

CYCLE HATCHER CO., BOX 223, SALEM, NEW YORK



INVESTIGATE THE POULTRY BUSINESS

Write for a free copy of my book describing

**Profitable
Combinations
of Egg, Broiler
and Roaster
Farms**



It gives the prices paid for eggs and poultry week by week for the past three years. It tells how and when a hatch taken off each week in the year could be most profitably marketed. It shows how you can make \$2.00 on a large winter roaster. It tells what profits can be made with each of the popular breeds, and the costs of production.

I have helped thousands to make money with poultry. My Model Incubators and Brooders are used on the money-making farms. It is my business to teach those who use them to do so profitably. Whether your needs are small or large, I will furnish without charge, estimates and plans for a complete equipment that will insure success without your spending a dollar uselessly. Send for my complete literature.

CHAS. A. CYPHERS

3927 Henry St.

Buffalo, N. Y.



60 DAYS FREE TRIAL

That's the way we sell the *Success* Incubator. We give you an opportunity of taking off two hatches and thoroughly trying machine. Send it back if not satisfactory. Send for free, illustrated catalog.

AMERICAN BROODER CO.
Box 94 Racine, Wis.

BANTA Incubators & Brooders

Backed by 14 Years
of Successful Use by



poultrymen all over the world. No guesswork. They are automatic in regulation and ventilation. Fully guaranteed to give YOU satisfaction. Send for free book. **BANTA-BENDER MFG. CO., Dept. 23, Ligonier, Ind.**



We have a proposition to make, if you intend to buy an Incubator or Brooder. Our 80 page Catalogue is free. **Write today.**

World Stock & Poultry Supply Co.

M. BURG & SONS, PROPS.

50 Raymond Ave., St. Paul, Minn.

Farm and Stock is an illustrated monthly magazine in the interest of CORN BREEDING, Cultivation and Live Stock. Price \$1 a year, but for a short time will be sent a year on trial for 10c and names of ten farmers who grow corn. **Farm & Stock, 251 Charles, St. Joseph, Mo.**

A Free Book About

Incubators

For your own sake don't buy an incubator until you read our book. It is written by the man who knows most about incubating—a man who devoted 24 years to the problem. It tells vital facts that you must know to buy wisely—facts you would not think of. It tells of Racine Incubators and Brooders, of course, but whether you buy ours or another, the facts are important. The man who writes the book made the Racine Incubator. When you learn what he knows you will want his machine, we think. The book is free—write today for it. Remember, We Pay the Freight. Address

Racine Hatcher Co., Box 114, Racine, Wis.

Warehouses: Buffalo, Kansas City, St. Paul.



The Fresh Air Incubator

Fresh Air applied to Artificial Incubation in a new and effective way, making possible higher per cent hatches, brighter, healthier stronger chicks.

5 FREE BOOKLETS ON ARTIFICIAL POULTRY PRODUCTION

1st—The Standard Incubator. 2nd—An Incubator for Beginners. 3rd—Universal Hatcher and Colony Brooders. 4th—Feeding

Chicks. 5th—What Users are Doing.

A PIANO BOX WILL DO

Put the Universal Hatcher into it and make your own brooder. The Universal Hatcher may be attached to any size or form of Colony house, mushroom house, small portable building or piano box and make about as good a brooder as money can buy. Write for catalog and the five books FREE. Others to follow, you'll get them all if your name is on our mail list.



Prairie State Incubator Co., 414 Main St., Homer City, Pa.

You can't tell a good incubator or a good brooder by looking at them. The only true test is in the Hatching and Raising of Chicks. The machines that Prove Best by that test are the

IDEAL

Incubators and Brooders.

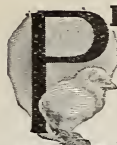
Made by the man who knows and backed by the J. W. Miller Cos.' guarantee to give you satisfactory results or your money back after 30, 60 or 90 days Free Trial. If you are discouraged try the Ideal—if you don't want to be discouraged try the Ideal. Send for the book "Poultry for Profit"—Free. 128 pages, illustrates and describes everything needed to raise poultry.

Address J. W. MILLER CO.,
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SEE THE 1906 RELIABLE

before you buy. Perfectly practical for poultrymen or beginners. Double heating system gives bigger hatches—saves one-third the oil. Sold on a money back guarantee. Write for free catalog. Reliable Farm Pure-Bred Birds and Eggs. Get prices. Reliable Incubator and Brooder Co. Box B-49 Quincy, Illinois, U. S. A.



PROBATIONED— PRACTICALLY PERFECT

Leading poultry experts say the many improvements in the new

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Standard Cyphers Incubator

make it worthy the name "The Perfect Hatcher." Sold on 90 days trial, to prove that in convenience of operation; in economy of oil; in certainty of results; in large hatches and especially in strong and healthy chicks, it has never been equalled. Our new catalogue tells why. A poultry guide, 223 pages, (8x11) seven practical chapters, 500 illustrations, free if you mention this paper and send addresses of two persons interested in poultry.

Address nearest office.

Cyphers Incubator Co., Buffalo, N. Y.
Chicago, Boston, New York, Kansas City or San Francisco.

Take Your Own Time. Old Trusty Incubator

40, 60 or 90 Days Trial.

We want to send you the 'Old Trusty' Book. You ought to read it before buying an incubator, because it has more every-day "chicken sense" in it than any catalog you have ever seen. 300 good pictures. It tells why "Old Trusty" does such good work—why it hatches so many and so good chicks—why it is so easy to operate—why it is so economical. It's sold on 40, 60 or 90 days trial, freight prepaid. Write to us.

M. M. Johnson Co.,
Clay Center, Neb.

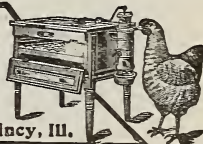


We Pay
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Freight.

\$12.80 For 200 Egg INCUBATOR

Perfect in construction and action. Hatches every fertile egg. Write for catalog to-day.

GEO. H. STAHL, Quincy, Ill.



\$1. PER MONTH

to \$2. per month rents any incubator. Rent pays for it. We Pay the Freight. 40 Days Trial at same prices. Buy plans and parts and build one. Prices, ready to use: 50 egg \$5.00; 100 egg \$9; 200 egg \$12.75. Brooders, \$3.50 up. Guaranteed. Catalog free.

BUCKEYE INCUBATOR CO., Box 64, Springfield, O.

GEM INCUBATORS AND BROODERS

Time tested and proven success; thousands in use; sold direct to you at wholesale prices. You get the maker's guarantee and save the middle man's profits. The Removable Chick Tray and Nursery—a feature no other has—explained in catalog. It's free. Write for it today.

Gem Incubator Co., Box 53, Troutwood, O.



\$4.88
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EGGS FROM BONE

Green cut bone doubles egg yield. More fertile eggs, vigorous chicks, early broilers, heavy fowls.

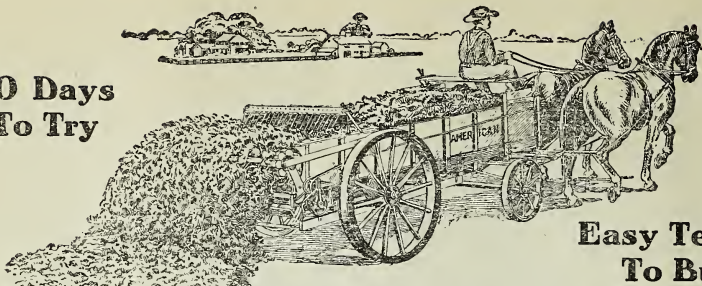
MANN'S LATEST MODEL BONE CUTTER

10 days free trial. No money in advance. Send it back at our expense if you don't like it. Cat'll free.

F. W. MANN CO., Box 37, Milford, Mass.



**30 Days
To Try**



**Easy Terms
To Buy**

Why We Will Let You Use an American Manure Spreader Free

It's just like this.
You need an American Manure Spreader.

It will double the value of every bit of manure you put on your land. It will pulverize and break it up, so it will mix with the soil easily.

And it will distribute evenly, so every square foot of land will get its share.

The other reasons you will find out yourself just as soon as you try the Spreader.

And we will let you try it for 30 days at our expense.

We send you the Spreader and prepay the freight. You use it a month. Before the 30 days are up, you will wonder how you ever got on without it.

The Spreader will practically earn its own cost before you send us a cent.

We give you a liberal allowance of time in which to pay for it.

And if you shouldn't find it exactly as represented, you send it back at our expense, and the trial costs you not a shilling.

We can afford to make you this offer because we know that our American Spreaders are well made, on correct principles, and that they will stand the Test.

They represent twenty-five years study and experience. Their good points are the result of our knowledge of field needs. We have developed them along practical lines.

American Spreaders are carefully and sensibly constructed, and they show it.

We own and operate the largest Manure Spreader plant in the World. We turn out more machines every year than any other

manufacturer. Our ample capital enables us to sell our Spreaders on long time.

We sell direct to you because we want to keep in close touch with users of our Spreaders.

This way we get a chance to tell you how to use them to best advantage and why our way will give best results.

We will tell you all about Manure Spreaders, and how to spread manure, so that you will be able to select a size best suited to your needs—and you have our 5 sizes and 9 styles to select from.

When you buy from us you get just the kind you should have to do your work best.

We don't belong to any trust.

We are an independent concern.

Write today for our **FREE** catalog. Tell us how much land you own, how many horses you keep and how many head of cattle, sheep and hogs you have, and we will give you the Government statistics as to the annual value of your manure crop.

We will also send you a little booklet telling all about "Our New Selling Plan."

It will interest you and save you money.

Ask at once. You will be glad if you do.

WHAT MR. HILL SAYS:

NANTICOKE, PA., Dec. 12, 1905
AMERICAN HARROW CO., Detroit, Mich.

Dear Sirs:—Enclosed you will find notes, duly signed, for spreader.

I am very pleased with the construction of the American Spreader, all its parts seem to be made for long service. The work it performs in three minutes is better than I have been able to do with the fork in 25 to 30 minutes and I anticipate its results to be far ahead of anything I have had in the past, especially on the hay-fields, as it fines the manure into such small particles as to smother the smallest tuft of grass. Your courteous treatment and prompt shipment of machine leaves nothing to be desired and I have no hesitation in saying I am a well satisfied customer.

WILLIAM J. HILL, Nanticoke, Pa.

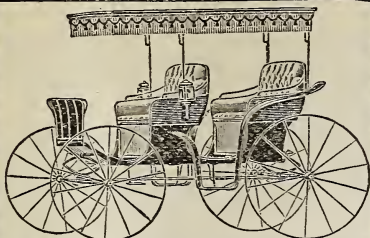
American Harrow Co., 4628 Hastings St., Detroit, Mich.

WE WANT NAMES!

We want YOU to send us the names and addresses of from ten to twenty-five farmers living in the United States each one having five cows or more. You can send us the names from any number of different postoffices. If you will send us these names we will send you **FOUR BEAUTIFUL PICTURES FREE**. These pictures are reproductions from the most celebrated paintings in the world, and they are of high quality, and we know that you will be pleased and delighted with them. No pictures will be given for a list of less than ten farmers.

We want to send a sample copy of the special dairy issue of the **RURAL HOME** to a lot of farmers who are not now taking our paper, and that is the reason we want these names.

Send us immediately a list of ten farmers and we will send you, **ABSOLUTELY FREE, FOUR REPRODUCTIONS OF THE WORLD'S FAMOUS PICTURES**. Address The Rural Home, 20 North William St., New York.

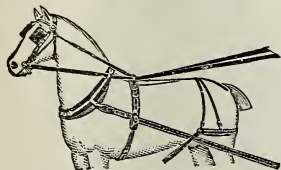


No. 331. Canopy Top Surrey. Price complete, \$65.00. As good as sells for \$25.00 more.

33 Years Selling Direct

Our vehicles and harness have been sold direct from our factory to user for a third of a century. We ship for examination and approval and guarantee safe delivery. You are out nothing if not satisfied as to style, quality and price. We are the largest manufacturers in the world selling to the consumer exclusively. We make 200 styles of Vehicles, 65 styles of Harness. Send for large free catalog.

ELKHART CARRIAGE & HARNESS MFG. CO., ELKHART, IND.



No. 10. Single Collar and Hame Harness. Price complete, \$14.60. As good as sells from \$5.00 to \$8.00 more.

SAVE HALF

the price. You can't beat our buggy jobs at any price. Here's the reason: You're dealing with the factory.

30 Days Free Trial, Two Years Guarantee.

Remember we make what we sell. We're not a mail order house. That's why we can give such a guarantee. Direct sales, direct guarantee, a price unequalled and 30 days to make up your mind. Write for our vehicle catalog and complete selling plan. The Progressive Vehicle Mfg. Co., Dept. O, Ft. Wayne, Ind.



10

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Tell us what style
vehicle you want.
The Ohio
Carriage Mfg. Co.
H.C. Phelps, Pres.
Station - 93
Cincinnati,
Ohio

NEW

**30 Days
Free Trial
2 Year
Guarantee**

styles



6 TONS OF WELL DRIED ALFALFA, RED TOP OR TIMOTHY HAY to the acre
If you wish to learn how, send a 2-cent stamp to
GEORGE M. CLARK, HIGGANUM, CONN., U. S. A.

SPRAY PUMPS

The Pump
That Pumps

SPRAY
PUMPS

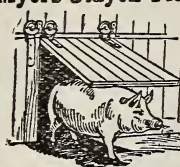
Double-acting, Lift,
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Store Ladders, Etc.
HAY TOOLS

of all kinds. Write
for Circulars and
Prices.

Myers Stayon Flexible Door Hangers



with steel roller bearings, easy to push and to pull, cannot be thrown off the track—hence its name—"Stayon." Write for descriptive circular and prices. Exclusive agency given to right party who will buy in quantity.
F. E. MYERS & BRO.
Ashland, Ohio.

COILED SPRING

FENCE



Closely Woven. Can not Sag. Every wire and every twist is a brace to all other wires and twists full height of the fence. Horse-high, Bull-strong, Pig-tight. Every rod guaranteed.

30 DAYS FREE TRIAL

and sold direct to farmer, freight prepaid, at lowest factory price. Our Catalogue tells how Wire is made—how it is galvanized—why some is good and some is bad. Its brimful of fence facts. You should have this information. Write for it today. Its Free.

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BROWN PAYS THE FREIGHT

HEAVIEST FENCE MADE

All No. 9 Steel Wire. Well Galvanized. Weighs 1/2 more than most fences. 16 to 25¢ per rod delivered. We sell all kinds of fence wire at wholesale prices. Write for fence book showing 110 styles. The Brown Fence and Wire Co., Cleveland, Ohio.



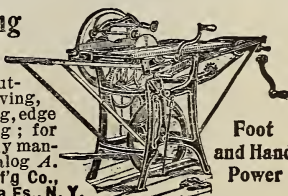
FENCE Strongest Made

Made of High Carbon coiled wire. We have no agents. Sell direct to user at factory prices on 30 days free trial. We pay all freight. Catalog shows 37 styles and heights of farm and poultry fence. It's free. Buy direct. Write today.

COILED SPRING FENCE CO.
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Wood-working Machinery.

For ripping, cross-cutting, mitering, grooving, boring, scroll-sawing, edge moulding, mortising, for working wood in any manner. Send for catalog A. The Seneca Falls Mfg Co., 44 Water St., Seneca Falls, N. Y.



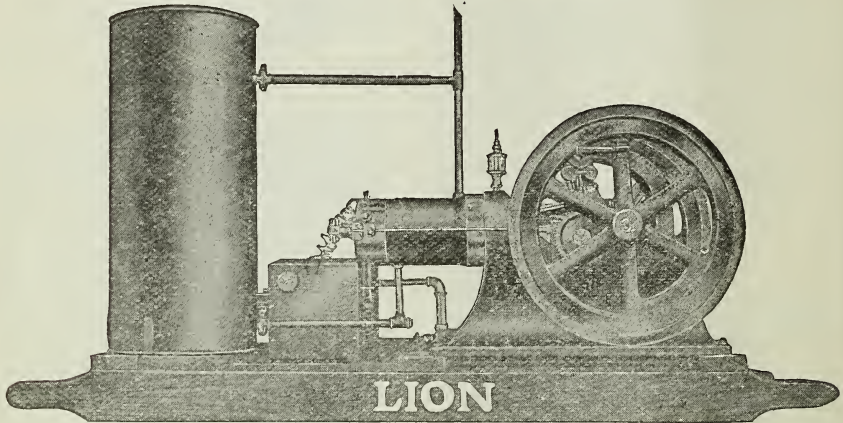
Foot
and Hand
Power

YES! WE ARE SELLING GAS AND GASOLINE ENGINES.

DIRECT FROM FACTORY TO USER.

The secret of our success in this field, hitherto unoccupied, is the extraordinary pains we take in teaching the purchasers of "Lion" engines how to operate them intelligently.

THIS ENGINE IS NO EXPERIMENT.



The "Lion" Gas and Gasoline Engines are simplicity simplified; they are used for all purposes where power is required, and will be found the most economical in operation.

WRITE US A LETTER LIKE THIS TODAY.

LYONS ENGINE COMPANY, Lyons, Mich.

Gentlemen: I am about to purchase a gas or gasoline engine for.....
 purposes, and wish you to send me full particulars about your approval offer as ad-
 vertised in "Gleanings in Bee Culture." Yours very truly,
 Name..... Town.....
 State..... Street No. or P. O. Box.....
 R. F. D.

When writing, please state definitely for what purpose you wish to use this engine, and whether gas or gasoline for fuel. This information is very important to us.

Send for descriptive catalog and further information in regard to our special "installment plan" of purchase. If you are thinking of buying a gas or gasoline engine, it will be worth your while to see how cheaply we can sell you a high-grade engine.

LYON ENGINE COMPANY, Lyons, Michigan

PLEASE REMEMBER WE SEND THE ENGINE, NOT THE ENGINE AGENT.

I Am the Paint Man

**2 Full Gallons Free to Try
6 Months Time to Pay**
You pay no freight to try my paint



O. L. Chase
St. Louis, Mo.

I AM the paint man. I have a new way of manufacturing and selling paints. It's unique—it's better.

Before my plan was invented paint was sold in two ways—either ready-mixed or the ingredients were bought and mixed by the painter. Ready-mixed paint settles

on the shelves, forming a sediment at the bottom of the can. The mineral in ready-mixed paint, when standing in oil, eats the life out of the oil. The oil is the very life of all paints.

Paint made by the painter cannot be properly made on account of lack of the heavy mixing machine.

My paint is *unlike* any other paint in the world. It is ready to use, but not ready-mixed.

My paint is made to order after each order is received, packed in hermetically sealed cans with the very day it is made stamped on each can by my factory inspector.

I ship my pigment—which is white lead, zinc, drier and coloring matter freshly ground, after order is received—in separate cans, and in an-

other can I ship my Oil, which is *pure old process* linseed oil, the kind that you used to buy years ago before the paint manufacturers, to cheapen the cost of paint, worked in adulterations.

I sell my paint direct from my factory to user at my very low factory price; you pay no dealer or middleman profits.

I pay the freight on six gallons or over.

My paint is so good that I make this wonderfully fair test offer:

When you receive your shipment of paint, you can use *two full gallons*—that will cover over 600 square feet of wall—two coats.

If, after you have used that much of my paint, you are not perfectly satisfied with it in every detail, *you can return* the remainder of your order and the two gallons will not cost you one penny.

No other paint manufacturer ever made such a liberal offer.

It is because I manufacture the finest paint, put up in the best way, that I can make this offer.

I go even further. I sell all of my paint on *six months' time*, if desired.

This gives you an opportunity to paint your buildings when they need it, and pay for the paint at your convenience.

**Back of my paint stands
my Eight Year, officially
signed iron-clad Guarantee.**



This is the longest and most liberal guarantee ever put on a paint.

For further particulars regarding my plan of selling, and complete color card of all colors, send a postal to O. L. Chase, St. Louis, Mo.

I will send my paint book—the most complete book of its kind ever published—also *utely* free. Also my instruction book entitled "This Little Book Tells How to Paint" and copy of my 8 year guarantee.

O. L. Chase The Paint Man.

715 G Olive Street,
St. Louis, Mo.

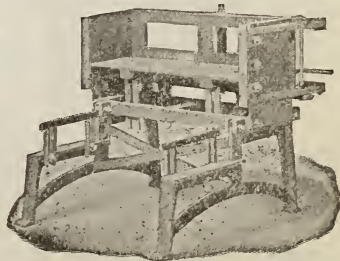
**NOTE—8-year Guarantee
backed by \$50,000 bond**



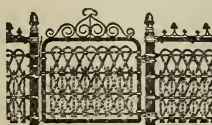
makes from 25 to 35 blocks. Write for descriptive circular and list.

These Blocks

were made on one of our \$50 concrete building-block machines. Prices range from \$50 upwards. Every machine complete with all parts ready to go to work, and guaranteed to give satisfaction. Two men make from 100 to 150 of these blocks per day. One barrel of Portland cement



Medina Concrete Company
Medina, Ohio



LAWN FENCE

Many designs. Cheap as wood. 32 page Catalogue free. Special Prices to Cemeteries and Churches. Address
COILED SPRING FENCE CO.
Box 448 Winchester, Ind.



FRUIT BOOKS FREE

Send your name and address at once and you will receive by return mail sample copies of the **BEST FRUIT PAPER** and full particulars about the "Bro. Jonathan Fruit Books," which may be secured free.
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One Dollar or More,

then add other dollars as you can spare them. Deposits can be sent by Postoffice or Express Money Orders, Check on Local Bank, New York Draft, or Currency by Express or Registered Mail. Your money will earn

4 PER CENT Interest,

compounded semi-annually, and will be secured semi-annually by assets of over

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and the management of prudent and successful business men. Write for particulars.

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A. T. SPITZER, Pres.

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PAROID

Before you buy roofing for any building, from a small poultry house to the largest mill or factory, it will pay you to get samples and complete proofs of quality from the oldest makers of ready roofing in America. (We originated the roll of roofing ready to lay with fixtures packed in the center.) Our concern was

Founded in 1817

We can show you why "Paroid" is the best of them all—lasts longer and saves most in repairs. Drop us a postal to-day.

F. W. BIRD & SON,
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New York, Washington, Chicago,
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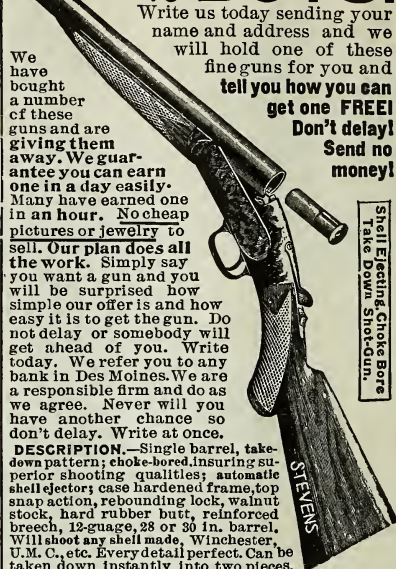
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TELEPHONE FACTS

We publish a finely illustrated book that is full of telephone facts. It tells all about telephones for farms, the kind to use, how to organize a farm telephone company, how to build the lines and where to buy the best telephones. Free if you ask for Book 36-F.

Stromberg-Carlson Tel. Mfg. Co., Chicago, Rochester, N.Y.

STEVENS TAKE DOWN SHOTGUN FREE TO BOYS!



We have bought a number of these guns and are giving them away. We guarantee you can earn one in a day easily. Many have earned one in an hour. No cheap pictures or jewelry to sell. Our plan does all the work. Simply say you want a gun and you will be surprised how simple our offer is and how easy it is to get the gun. Do not delay or somebody will get ahead of you. Write today. We refer you to any bank in Des Moines. We are a responsible firm and do as we agree. Never will you have another chance so don't delay. Write at once.

DESCRIPTION.—Single barrel, take-down pattern; choke-bored, insuring superior shooting qualities; automatic shell ejectors; case hardened frame, top snap action, rebounding lock, walnut stock, hard rubber butt, reinforced breech, 12-gauge, 28 or 30 in. barrel. Will shoot any shell made, Winchester, U.M.C., etc. Every detail perfect. Can be taken down instantly into two pieces.

Write for book telling what dozens of Weight 6½ lbs men and boys say of this gun. Write today.

Successful Farming, 94 TENTH STREET, DES MOINES, IOWA

Shell Ejecting Choke Bore
Take Down Shotgun.

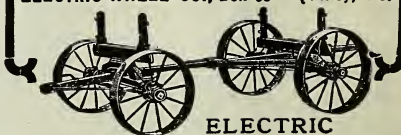
Let Us Send You Our Book.

about good wheels and good wagons that will save you a lot of work and make you a lot of money—the

ELECTRIC STEEL WHEELS —and the— ELECTRIC HANDY WAGON.

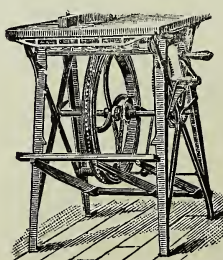
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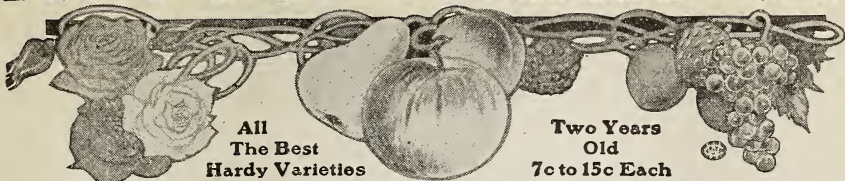
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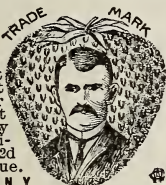
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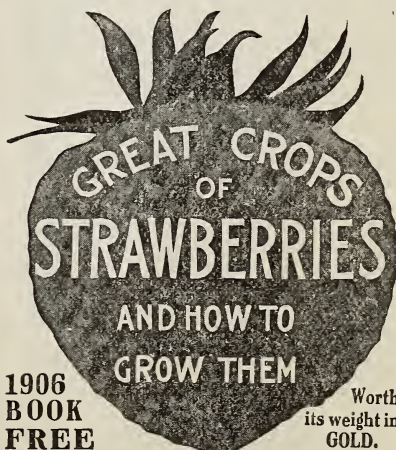
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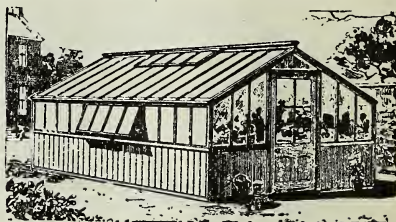


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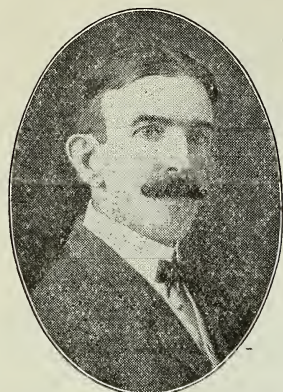
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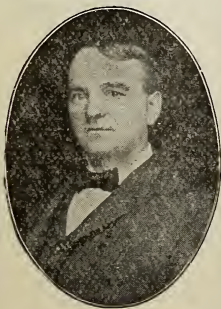
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Small Fruits. Any one of these num-  
bers will be worth a dollar to you. We  
publish the "Brother Jonathan Series"  
of fruit books. Send your name and  
BRO. JONATHAN learn how to secure these books free.  
Fruit-Grower Co. 152 S. 7th, St. Joseph, Mo.



TRADE MARK

## Bee-keepers, Co-operate!

We are Bee-keepers--Organized in  
the Interest of Fellow Bee-keepers

(No Matter where They Live)

Membership dues, \$1.00 per year.

Present membership—about 200 bee-keepers.

Our 1906 price list of bee-supplies, and a leaflet  
containing valuable information, are now ready to mail.

If you wish to assist in co-operation among bee-  
keepers write us now and send the names and address-  
es of all your neighbor bee keepers.

The St. Croix Valley Honey-producers' Association

Headquarters Until June 1, 1906

Glenwood, Wisconsin

## Something New in Honey-jars...

Cook's Square Jar combines a new fea-  
ture that improves the package and  
reduces the cost, and is the best and  
cheapest 1-pound glass package made.  
Send for circular and full catalog of  
hives, bees, and useful implements. . .

J. H. M. COOK, 70 Cortlandt St., New York

The Oldest Supply-house in the East, and  
only Reliable goods sold. 10 cents brings  
sample jar by mail.

## BEE - SUPPLIES

Distributing-house for Lewis' Goods,  
Dadant's Comb Foundation, etc., at  
Factory Prices.

Every thing the bee-keepers need. No order too large  
for us, nor none too small. Cash orders before February,  
6 per cent discount.

### FINE EXTRACTED HONEY

The best the world can produce. Sample sent, 8 cents.  
How much can you use? We always buy beeswax.  
Catalog and "Special" free.

C. M. SCOTT & CO.

1004 E. Washington St.

Indianapolis : Indiana

## Southern Bee-keepers !

If you want bee-keepers' supplies of best quality and for the least money possible, you should buy  
them from the WHITE MANUFACTURING COMPANY. Situated, as we are, right near the great pine  
belt of North Texas, Louisiana, Arkansas, and Indian Territory, we can secure the best material possible  
at least cost, thus enabling us to give entire satisfaction. Catalog and price list free.

White Manufacturing Co. - Blossom, Lamar Co., Texas

# Bee-supplies

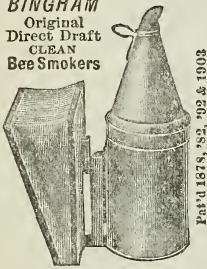


We manufacture every thing needed in the apiary, and carry a large stock and great variety. We assure you the best goods at **LOWEST PRICES**, and our excellent freight facilities enable us to make prompt shipment over fifteen different roads, thereby saving you excessive freight charges as well as time and worry in having goods transferred and damaged. We make the Alternating, Massie, Langstroth, and the Dovetail hive.

Our prices are very reasonable; and, to convince you of such, we will mail you our free illustrated and descriptive catalog and price list upon request. We want every bee-keeper to have our catalog. **SPECIAL DISCOUNTS** now. Write to-day. Address

**Kretchmer Mfg. Co., Council Bluffs, Iowa**

**BINGHAM**  
Original  
Direct Draft  
CLEAN  
BeeSmokers



Pat'd 1878, '82, '92 & 1903

## Pretty Recognition

A lady to whom I sent a Smoke Engine to order per mail sent this delicate recognition, "I am pleased," and signed her name.

We have made hundreds of thousands of smokers in the last twenty-eight years. They always please and *last*; don't spit fire; don't go out; don't daub themselves all over. We are the most extensive *exclusively* bee-smoker makers in the world.

**T. F. Bingham - Farwell, Mich.**

Chico, California, October 28th, 1905.

Dear Mr. Bingham: Enclosed find money-order for a honey-knife and smoker. I can't do business without a Bingham Smoke Engine.  
J. M. RANKIN.

## A Prosperous

Season is yours.....

if you take time by the forelock, and be prepared for the season when it comes. DON'T put off ordering your supplies until you need them. Order now, and get the discounts.

I have a full line of Root's Goods, and sell them at factory prices and discounts. Send me a bill of what you want and let me tell you what I will deliver them at your depot for. Send for my 36-page catalog—it will be sent free—also a full description of the Hilton Chaff Hive and Supers, with a comparison made by the Michigan State Agricultural College between the single and double walled hives. All free for the asking. Cash or goods in exchange for wax.

**Geo. E. Hilton, Fremont, Mich.**

## WISCONSIN - BASSWOOD

### FOR SECTIONS

We make them and the very best of **Dove-tailed Hives, Shipping-cases**, and a full line of Bee-keepers' Supplies always on hand. We make very prompt shipments. Let us hear from you.

**Marshfield Manufacturing Company**  
Marshfield, Wisconsin

FOR 14 YEARS

**I. J. STRINGHAM**  
OF 105 PARK PLACE  
**NEW YORK**

has been furnishing bees and apiarian supplies of every desired kind to bee-keepers of the East. A very liberal discount is now allowed early orders.  
Apiaries, Glen Cove, L. I. - - Catalog free.





## Everything for the Bee Keeper

will be found in our Illustrated Catalogue No. 40. It contains a full line of Hives, Supers, Followers, Sections, Section Holders, Frames, Extractors, Smokers, etc. All these and many other essentials are manufactured by us. Everything is guaranteed to be right and of best quality. Our prices are so reasonable that any bee keeper may afford the best supplies. We cannot tell you here of all the good things in this book.

Better send for a copy today. We mail it free, together with a copy of the **Progressive Bee Keeper**, a splendid monthly publication devoted to bee interests. It will help you start right and keep you right after you are started. It is invaluable as an aid to every bee keeper. Ask for the paper and the book.

### We Sell the Best Incubators and Brooders.

Delivered at your station, prices the lowest. Write us at once and save money. Address

**LEAHY MFG. CO., 15 Talmage St., Higginsville, Mo.**

Branches at Omaha, Neb. and East St. Louis, Ill.



## A. H. REEVES DISTRIBUTOR OF ROOT'S GOODS FOR NORTHERN NEW YORK Perch River, Jefferson Co., N. Y.

**PLEASE TAKE NOTICE** that we have purchased the Atchley steam bee-hive factory, and are now putting in up-to-date machinery for making Dovetailed bee hives and supplies. We earnestly solicit a share of your patronage. We quote prices on two hives for comparison: One two-story eight-frame hive in the flat for extracted honey, complete ready to nail \$1 25; one story and-a-half hive in the flat with sections, complete ready for comb honey, \$1.25; self-spacing Hoffman frames in the flat, \$15 00 per 1000. Remember these are standard goods and Dovetailed hives. Get prices on large lots. Dittmer's foundation at Dittmer's prices. We are headquarters in the South for bees and queens—untested, \$1.00 each; \$9.00 per dozen; tested, \$1.50. Full colonies nuclei and queens in large lots our specialty. Send for catalog. **THE BEE AND HONEY CO.,** Will Atchley, Prop., Beeville, Bee Co., Texas.

**H. C. Simpson, Catawba, S. C.**  
Dealer in  
**BEE - KEEPERS' SUPPLIES!**  
Breeder of Italian bees and queens.  
Root's Goods a specialty.

### MOORE'S LONG-TONGUES and GOLDENS

Select untested queens, \$1.00; six, \$5.00; twelve, \$9.00. Tested, \$1.50; six, \$8.00. Best breeders, \$3.50. Safe arrival guaranteed.

**W. H. Rails, - - - Orange, Calif.**

**PURE ITALIAN QUEENS.**—From red-clover and five-banded breeders. Untested, 75c; select untested, \$1.00; tested queens, \$1.50; select tested, \$2.50. Safe arrival guaranteed.

H. M. PARKER, JR., James Island, S. C.

## 850,000 GRAPE VINES

69 varieties. Also small fruits, trees, &c. Best root ed stock. Genuine, cheap. 2 sample vines mailed for 16c. Descriptive price-list free. **LEWIS ROESCH, FREDONIA, N. Y.**

## PROFITABLE POULTRY



Send 3c for our 64-page book, finely illustrated, that tells how to make money raising poultry. Others are doing it; why not you! This book gives full information on breeding, feeding, rearing and hatching. Illustrates and tells why Berry's "Biddy" incubators and brooders hatch and raise the largest per cent of chicks—the kind to buy. Contains cuts of our fine pure-bred poultry with prices of birds and eggs for hatching.

Berry's Golden Rule Poultry Farm, Box 53 Clarinda, Ia.

## You Need It. : : : : :

If you have only a few chickens;  
If you are at all interested in poultry;  
If you are breeding for fancy points;  
If you cater to the market trade;  
If you are in the business on large scale, you need

## Ohio Poultry Journal

the paper published in the interest of the farmer, beginner, and small breeder, with plenty of pointers for the experienced fancier. Each month is especially edited for the needs of that special season of the year. Regular price is 50 cts. a year, but we offer it **AT HALF PRICE** for a short time to introduce it to readers of Gleanings. Send only 25 cts. and get it a year; or, if you send us \$1 for a year's subscription to Gleanings in Bee Culture, we will send you Ohio Poultry Journal for a year free. Address Ohio Poultry Journal, Dept. 14, Dayton, Ohio.

## Kimball's Dairy Farmer

**THREE MONTHS for 10c**

Jam full of sensible cow talk—short, boiled-down, practical stuff for you men who own the cows. Semi-monthly. The most widely quoted agricultural paper of the day.

**E. R. Shoemaker, Editor and Manager**  
Box 193, Waterloo, Iowa

## Wants and Exchange.

Notices will be inserted under this head at 15 cts. per line. Advertisements intended for this department should not exceed five lines, and you must say you want your advertisement in this department or we will not be responsible for errors. You can have the notice as many lines as you like, but all over five lines will cost you according to our regular rates. This department is intended only for bona-fide exchanges. Exchanges for cash or for price lists, or notices offering articles for sale, will be charged our regular rates of 20 cts. per line, and they will be put in other departments. We can not be responsible for dissatisfaction arising from these "swaps."

**WANTED.**—Full colonies of bees. M. C. HOUGH,  
180 Washington St., Providence, R. I.

**WANTED.**—To exchange job-printing for queens.  
YOUNG BROTHERS, Rt. 2, Girard, Pa.

**WANTED.**—To exchange stock of groceries for bees or small homestead.  
A. E. SHAW, Boscobel, Wis.

**WANTED.**—About 100 colonies of bees from Maryland or Carolina, located near the water.  
I. J. STRINGHAM, 105 Park Place, New York.

**WANTED.**—Honey, wax, slumgum, or supplies, in exchange for standard-bred White Wyandottes.  
H. E. CROWTHER, No. Kingsville, Ohio.

**WANTED.**—To exchange incubator and bicycles for queens or offers.  
S. G. MOGAN, Blooming Prairie, Minn.

**WANTED.**—To exchange 38-cal. Colt's revolver for bees.  
WM. RUSSELL,  
4810 38th Ave., South Minneapolis, Minn.

**WANTED.**—Raw furs of all kinds. The highest cash prices paid. Prices on application. Goods held separate if you wish.  
O. H. MORLEY, Hector, N. Y.

**WANTED.**—By a young man, bees in Northern Michigan to handle on shares; can furnish references.  
R. RASMUSSEN, 191 Dale Ave., Grand Rapids, Mich.

**WANTED.**—To correspond with parties having bees to sell in carload lots for May delivery. Quote prices and give particulars.  
H. & W. J. MANLEY, Sandusky, Mich.

**WANTED.**—Refuse from the wax-extractor, or slumgum. State quantity and price.  
OREL L. HERSHISER,  
301 Huntington Ave., Buffalo, N. Y.

**WANTED.**—200 to 400 colonies of bees within shipping distance. Give lowest cash price with all details in first letter.  
DR. GEO. D. MITCHELL & Co.,  
340 Fourth St., Ogden Utah.

**WANTED.**—To correspond with any one that has, or can get me, a pair of black foxes alive. Will pay a big price for a pair.  
JOHN R. BROWN, Route 2, Fall Creek, Wis.

**WANTED.**—Twelve copies second edition "Increase." Will exchange new edition for old. Also want bees in colonies, swarms, or shakes.  
E. L. PRATT, Swarthmore, Pa.

**WANTED.**—Old books on bee culture, especially from foreign countries. Please state titles, authors, year of publication, edition, binding, condition, number of pages, and price wanted.  
A. L. BOYDEN, Medina, Ohio.

**WANTED.**—Small place in or near town suitable for bee-keeping, in Delaware, Sullivan, or Greene Counties, New York. Give full particulars of what you have to offer, with price, etc.  
Box S. T. 510, care of Gleanings.

**WANTED.**—Every bee-keeper who takes GLEANINGS to send in the subscription of one or more friends. For three new subscriptions at \$1.00 each we will give a copy of the 1905 edition of A B C of Bee Culture. Sample copies to show your friends will be sent upon request.  
THE A. I. ROOT Co., Medina, Ohio.

**WANTED.**—To exchange house and three lots in Basalt, Colo., for apiary in sage regions of California.  
J. W. KALFUS, San Luis Obispo, Cal.

## Help Wanted.

**WANTED.**—A young man who understands bee-keeping wishes a position in the Western States.  
F. W., care of GLEANINGS, Medina, Ohio.

**WANTED.**—A temperate and industrious young man to work on farm and help in bee-yards when necessary. State age, and wages desired.  
W. J. MANLEY, Sandusky, Mich.

**WANTED.**—Young man to work on farm where bees are kept, celery grown, and market-gardening followed. Give references, wages expected, and experience had.  
MILAN STILL, Winona, Wash.

**WANTED.**—An up-to-date man (with family preferred) to assist me in the bee-business, and run it for all it is worth. Will sell a part or half share if desired; splendid location.  
R. M. MCMURDO, Cauto, Cuba.

**WANTED.**—Energetic young man to work on farm and assist in bee-yard for seven or eight months. State experience, and wages desired.  
ERWIN BARTON, Delanson, N. Y.

**WANTED.**—Two young men to work in apiary and on farm of 80 acres. I am one of the largest producers of honey in this state. Will give my experience and fair wages. For particulars address  
HERBERT MANLEY, Route 3, Sandusky, Mich.

**WANTED.**—Young man who wishes to learn the bee-business as assistant four to six months. State age, experience, wages desired, and give reference—all in first letter; no tobacco, etc.  
THE E. F. ATWATER CO., Box 37, Meridian, Idaho.

**WANTED.**—Competent bee-keeper to work 200 to 300 colonies of bees on shares; good location; two crops of honey in a season. Would hire a good man by the month. Give references, wages expected, and experience, in first letter.  
W. E. FORBES, Plainwell, Mich.

**WANTED.**—A competent, active, up-to-date bee-keeper—single man, one familiar with artificial increase, queen-rearing, etc. Must be able to accomplish results, both in shop and apiary, or one anxious to learn. State age, experience, wages, etc.  
HENRY STEWART, Prophetstown, Ill.

**WANTED.**—Last year my students helped to secure a harvest of 60,000 lbs. of honey from 296 colonies, spring count. I can take one or two young men, able-bodied, using neither tobacco nor liquor and of good habits (none other need apply). They must be willing to work right along. I will give board and washing; and if student does well and I do well, will give something more.  
R. F. HOLTERMANN, Brantford, Ont., Can.

## Wanted, Situations.

**WANTED.**—Position as apiarist for season 1906. Best references.  
M. W. SHEPHERD, Wakeman, O.

**WANTED.**—Position in apiary, May to September. Have some experience and want to learn more.  
L. E. REES, Marlboro, Mich.

**WANTED.**—Situation by an expert colored bee-keeper; thorough knowledge of tropical bee-keeping; ten years' experience; good references; desire situation in Southern States; employment the year round; age 30.  
Address F. O. R., care Gleanings in Bee Culture.

## For Sale.

**FOR SALE.**—Leaming corn, White Wyandottes, Barred Rocks, Queens. Circular.  
J. F. MICHAEL, Winchester, Ind.



FOR SALE.—650 colonies bees; 1905 crop, 345 lbs. per colony spring count. W. J. PECK, Manzanita, Cal.

FOR SALE.—Eight acres on foothills, 'twixt orange and sage; 105 stands bees, three stories; good bee-house, etc. J. C. HALL Co., 29 Nordinia, Redlands, Calif.

FOR SALE.—Bee-keepers' supplies. Root's goods. Root's prices. Free catalog. F. R. DANIELS, 117 Florence St., Springfield, Mass.

FOR SALE.—Rosecomb Buff Leghorn eggs, \$2.50 for 15, \$10.00 per 100; largest breeder and finest flock in the world; largest and best layers of all Leghorns. Gold Dust (original). F. BOOMHOWER, Gallupville, N. Y.

FOR SALE.—Root's bee-supplies at factory prices; full colonies Italian bees; queens in season (catalog free); Plymouth Rock chickens and eggs; incubators, brooders, poultry food, etc. H. S. DUBY, St. Anne, Ill.

FOR SALE.—If you want an illustrated and descriptive catalog of bee-keepers' supplies for 1906 send your name and address to FRANK S. STEPHENS, (Root's Goods.) Paden City, W. Va.

FOR SALE.—100 colonies of pure Italian bees in eight or ten frame new Dovetailed hives with Hoffman frames; tested queen in each colony. Price \$6.00 each. In lots of ten, \$5.00 each.

F. A. GRAY, Redwood Falls, Minn.

FOR SALE.—Chaff bee-hives; outside painted tin, and inside half-inch lumber; cheap, serviceable, and light weight for handling. Also 1500 4x5 Root's brand-new sections, never opened. F. W. MORGAN, DeLand, Ill.

FOR SALE.—Trees by mail; one-year-old peach and apple trees, 10c each; \$1.00 per dozen. Guaranteed true to name and free from disease.

G. A. HAFER, Batchtown, Ill.

FOR SALE.—500 colonies of bees located in the best sweet-clover belt in the U. S. Will take \$1500 for the outfit. Reason for wanting to sell, too much other business. If I do not sell shall want a good man to run them next season. W. N. CANNON, Greenville, Ala.

FOR SALE.—Weed-process foundation business; a rare chance to buy a foundation business with good growing established trade; price \$800.

H. F. HAGEN, Denver, Colo.

Or The A. I. Root Company, Medina, Ohio.

FOR SALE.—150 colonies of bees, 30 in Danz. and balance in Root eight-frame Dovetailed hives, at \$3.50 per colony complete, in excellent condition for winter; heavy stores; a great bargain for the price. If interested, write for further particulars.

W. M. BAILEY & Co., Spartanburg, S. C.

FOR SALE.—Three untested Italian queens for \$1.00 after July 1, if ordered now; warranted pure mated, 10 cts. extra. Satisfaction, or money back. Only 300 at this rate. All you want as long as they last. Orders filled in rotation. Particulars free.

S. F. TREGO, Swedona, Ill.

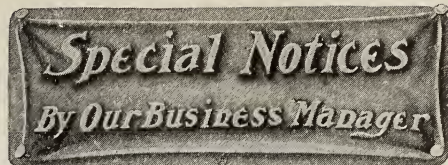
FOR SALE.—Five hundred two-story double-walled hives for comb honey; use Langstroth frame, thick top-bars, 3½x5 or 4x5 sections; almost as light as single-walled hives. at a less price; crated and sold only in lots of five or multiples of five. Will also furnish you with the finest of Carniolan queens; had 20 years' experience; nothing but the best sold. Send orders now—\$1.00 each, two for \$1.75, six for \$4.50 for queens mailed in May and June. W. W. CRIM, Pekin, Indiana.

### Convention Notices.

The California State Bee-keepers' Association will hold its sixteenth annual convention in the Chamber of Commerce Building, Los Angeles, February 20, 21, 1906. Meeting called to order at 1:30 P.M., February 20. Any one interested is invited to attend.

Ventura, Cal., Feb. 3.

J. F. MCINTYRE, Sec.



### PLAIN SECTIONS 25c PER 1000 LESS.

A curious error occurred in the first edition of our bee-supply catalog for 1906. If you happen to have a copy of this edition you will note on page 18 that the price of plain sections reads five cents less per 1000 than price named in tables. In electrolytizing, the figure 2 of the 25 cents slipped down the column and was not noticed. If you have ordered plain sections at five cents less per 1000 we will make matters right with you,

### FRENCH GLEANINGS.

Under the title of "L'Apiculture," our agent for continental Europe, Mr. Emile Bondonneau, 142 Faubourg St. Denis, Paris, began January 1st the publication of a new bee journal. This new periodical consists largely of translations made from current numbers of GLEANINGS, and illustrated by the same excellent half-tones. We receive large numbers of this paper, and can mail them monthly for \$1.50 per year. Mr. Bondonneau also translated the A B C, which we are selling at \$2.00 per volume. We can also furnish in French, "Facts About Bees" and "Modern Queen-rearing" at 25 cts. per copy. Tell your French friends about our publication in this language.

### SWEET-CLOVER SEED WANTED.

We are now in the market for most any quantity of sweet-clover seed. If you have any hulled or unhulled first-class seed send us samples, telling how much you have to sell, and we will make you the best offer possible.

### SWEET CLOVER.

Now is the time to order sweet clover. We have a splendid stock on hand, and can ship promptly. Ask for our sweet-clover pamphlet if you desire further information regarding this great honey-forage and soil-improving plant.

### PRICES.

|               | By mail,<br>per lb. | By fgt. or<br>ex. per lb. | 10 lbs. by fgt. or ex.<br>per lb. |
|---------------|---------------------|---------------------------|-----------------------------------|
| White, hulled | 30c                 | 20c                       | 18c                               |
| " unhulled    | 30c                 | 10c                       | 8c                                |
| Yellow, "     | 27c                 | 17c                       | 15c                               |

Prices subject to change without notice. Bags free. F. o. b. Medina or Chicago.

## Superior Stock

I make a specialty of long-tongue  
Italian, Carniolan, and Caucasian,

Rearing only from best stock obtainable. My Italian queens are unexcelled; my Carniolans and Caucasians from best imported queens. All races bred in separate yards to insure purity. A postal will bring my price list for 1906.

**CHARLES KOEPPEN**

Fredericksburg, Va.

## Now is the Time to Plan

for the coming season, and you are bound to need queens to replace those that are old and worn out. Many of my customers have written me that the queens bought of me were the only ones that gave any surplus the past poor season. You had better plan to supply yourself with a lot of those fine young queens from the Laws apiaries, and double your crop of honey.

### I AM BREEDING THE LEATHER AND GOLDEN ITALIANS,

also the Holy Lands. So many calls have come for Carniolans that I have added this splendid race to my list, and there is no doubt that the Carniolan, or the Carni-Italian cross, will cap their honey whiter than any of the Eastern races. I am not only prepared to furnish you with the best bees and queens in existence, but in any quantities, large or small, from one to a thousand queens. Nuclei and full colonies in season. I also offer another car of bees the coming season.

**PRICES:** Queens, each, \$1.00; six for \$5.00. Breeders, each, \$3.00. Write for quantity lots.

**W. H. LAWS, BEEVILLE, BEE CO., TEXAS.**

## Caucasian - and - Italian - Queens

from California

Prices: CAUCASIAN—One tested, \$3.00; one best breeding, \$6.00; one imported from Caucasus, \$7.00. ITALIAN—One untested, \$1.00. six for \$5.50, 12 for \$10.00; one tested, \$1.50; one best breeding, \$5.00. Caucasians bred from the best imported breeding queens. Italians bred from breeding queens we procure from principal breeders of this country who have the best honey-gatherers. Nuclei and full colonies of bees. Send for particulars, and see our adv. in GLEANINGS, February 1st.

**A. E. Titoff, Ioamosa, San Bernardino Co., California**

### All the year round.

We are prepared to supply queens any month in the year. We have secured the services of one of the best breeders, and use select imported stock. Prices as follows:

|                         |        |
|-------------------------|--------|
| Untested Italians ..... | 66     |
| Tested .....            | \$1 00 |
| Select tested .....     | 1 50   |
| Extra select .....      | 2 50   |

We do not guarantee impossibilities, such as sending queens to cold climates in winter, but for any reasonable distance and time we guarantee safe arrival. Write for further particulars.

**A. COMES CASSERES,**  
15 Orange St., Kingston, Jamaica.

## Extra Honey Queens

I am offering to the honey-producers this year some of the best Italian stock in Southern California. These bees are not only extraordinary honey-gatherers, but are also gentle, and build very little brace or burr comb. They will bring in sage honey long after other stock has stopped working on sage and gone to work on sumac. They are, in fact, a good bee, and one which I unreservedly guarantee. I sell only one grade—select untested—as I do not sell any queen which is not select.

### Prices

|          |        |          |        |          |        |
|----------|--------|----------|--------|----------|--------|
| One..... | \$1.00 | Six..... | \$5.00 | Twelve.. | \$9.00 |
|----------|--------|----------|--------|----------|--------|

**Francis J. Colahan**  
Bernardo, San Diego Co., Calif.

## CAUCASIAN QUEENS!

Caucasian bees are the gentlest of the PROFITABLE HONEY-PRODUCERS. A trial will convince you. Have your queens, both Caucasians and Italians, bred and mated to order, and then you will have what you want. Address

**Robert B. McCain, Yorkville, Ills. R. F. D.**

## Rose Lawn Queens

Leather-colored and golden Italians or Carniolans. Unsurpassed for beauty, gentleness, and honey-gathering. Our location insures absolute hardness and prompt shipment to any portion of the country. Our apiary is stocked with breeders from the choicest strains in America. Select queens, \$1.00; six, \$5.00. Tested, \$1.50; six, \$8.00. Few choice breeders, 1 yr. old, at \$3.00. Caucasians from imported breeders after June 1st.

**Rose Lawn Apiary, Lincoln, Nebraska**

Frank G. Odell, Proprietor

## Queens by Return Mail

I moved from Ozan, Ark., to Beeville, Tex., to be able to fill all orders for my famous strains of three and five banded bees and queens. Am now ready to fill or book your orders. Untested queens, either race, 75 cts. each or \$8.00 per dozen. Tested, \$1.25 each, \$12.00 per dozen. Select tested, \$1.50 each. Breeders, the very best that money can buy, \$3.00 to \$5.00. Caucasian queens, \$1.00 each. Send all your orders to

**J. W. Taylor, Beeville, Texas**

## Same Old Place

is where you get the best of queens; untested, \$1.00; \$4.25 per 6; \$8.00 per dozen. Tested, \$1.50; best breeders, \$5.00. Absolute satisfaction and safe arrival guaranteed. Carniolans, Cyprians, Holy Lands, Italians.

**The JENNIE ATCHLEY CO..**

Box 18, Beeville, Bee Co., Tex.

## ITALIAN QUEENS AND GLEANINGS.

For \$1.10 I will send GLEANINGS one year, new or renewal, and give one of my choice untested Red-clover Queens. Queens sent after May 1st.

**W. T. CRAWFORD, Hinston, La.**

**14 SUCCESSIVE SEASONS** we have bred bees in high mountain altitudes to get wing and lung power, while sage demands great tongue reach. Send for descriptive list of queens. **C. W. Dayton, Chatsworth, Cal.**



## Save Money on Your BEE-SUPPLIES

I ship several cars of  
the celebrated Root  
goods to Kansas City

every year, and save hun-  
dreds of dollars for our cus-  
tomers in Kansas, Nebras-  
ka, Missouri, etc. Let me  
save you a few dollars on  
your goods. Write me at  
Main Office. Cat. log, in-  
formation, etc., sent free.

**Carl F. Buck**

Augusta - : - Kansas

**B**efore you **B**uy your next  
**B**ee-supplies **B**e sure to

send for our new revised catalog.  
We are the oldest bee-supply  
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